ECHNOLOGY DEPT.

Gas Journal

VOL. 278. 106TH YEAR. LONDON, MAY 26, 1954 NO. 4747. PRICE 1/3

PUBLIC LIBRARY
JUN 10 1954
DETROIT

THE BRIGHTON INSTALLATIONS AT PORTSLADE

The three installations of W-D Continuous Vertical Retorts at the Portslade Works of the South Eastern Gas Board.

The first installation commenced gas making during September 1953, the second was in operation by the end of the year and the third will be at work later this year.

The total gas making capacity is over 15 million cu. ft. per day. The design is such that a fourth section can be added in the future to increase the capacity to over 20 million cu. ft. per day.

WD

WOODALL-DUCKHAM CONSTRUCTION COMPANY LTD.

Woodall-Duckham House, 63-77, Brompton Road, London, S.W.3

Telephone: KENsington 6355 (10 lines) Telegrams: Retortical (Southkens) London

GAS COMPRESSORS

150 YEARS OF ENGINEERING EXPERIENCE GOES INTO THE MANUFACTURE OF OUR PRODUCTS

Illustration by courtesy of N.C.B.

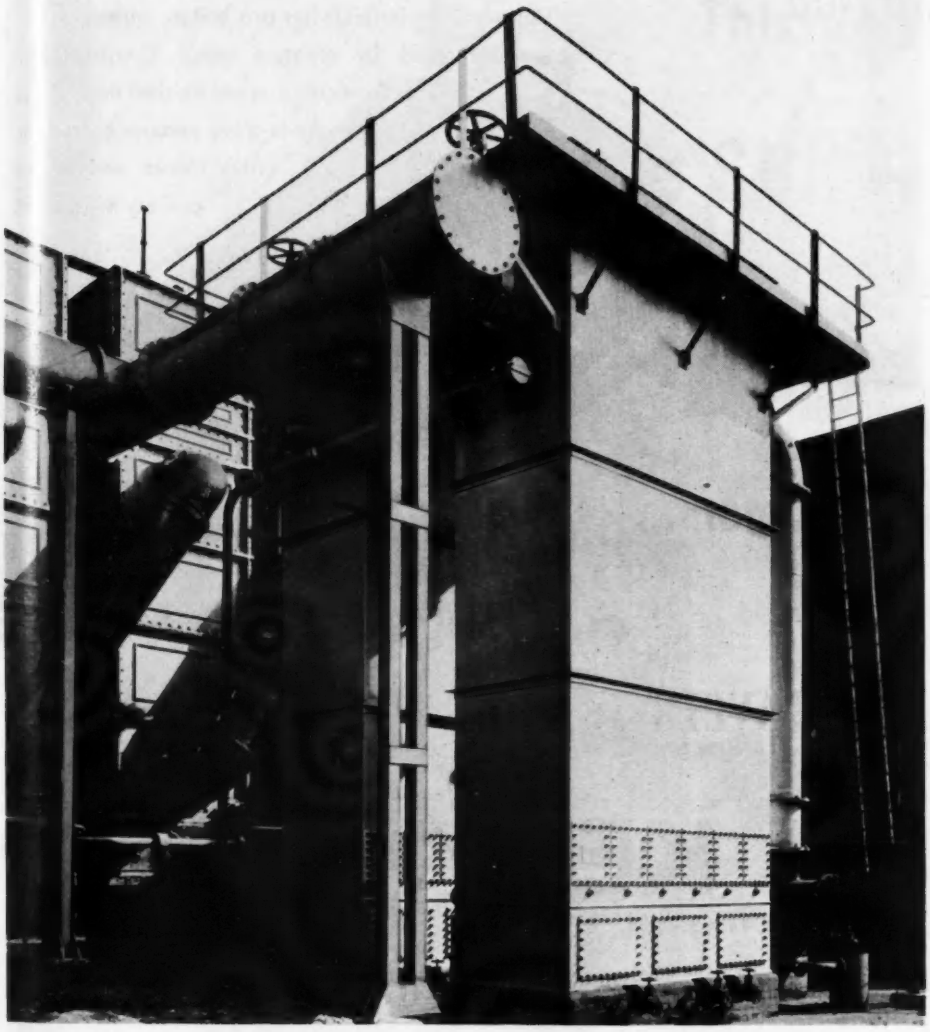
A recent installation of three 8" Stroke Vertical Reciprocating Compressors, each machine capable of passing 87,500 cubic feet of gas per hour, against 20 lb. per square inch outlet pressure, running at 450 r.p.m., direct coupled to a National Vertical Oil Engine.

Made by...

THE BRYAN DONKIN COMPANY LTD. CHESTERFIELD

MEMBER OF THE SOCIETY OF BRITISH GAS INDUSTRIES

The hallmark of high quality plant



MODERN CONDENSERS

DEMPSTERS (MANCHESTER) CROSS TUBE FLOW CONDENSERS give full consideration to water velocity and the prevention of thermo-turbulence.

Particulars supplied on application.

by

R. & J.

DEMPSTER Ltd.

Constructional Gas & Chemical Engineers

GAS PLANT WORKS · NEWTON HEATH

MANCHESTER · 10

London Office: 34, VICTORIA STREET, S.W.1.

We make:— BY-PRODUCT and CHEMICAL PLANT · CONDENSERS · DETARRERS · GASHOLDERS · GAS VALVES and CONNECTIONS · IRON CASTINGS · PURIFIERS · STILLS · TANKS · WASHERS · WELDED and RIVETED STEELWORK

A

For the office..

the flat..

or the one-roomer..

This attractive hotplate has two boiling burners controlled by separate taps. Constructed entirely of cast iron and finished throughout in easy-to-clean vitreous enamel, in either Cream and Brown or Grey Mottle and Black.

THE **Duette** HOT PLATE

FLAVELS of LEAMINGTON

MAKERS OF FINE QUALITY COOKING & HEATING APPLIANCES SINCE 1777.

E. C. & J. KEAY, LIMITED

CONSTRUCTIONAL ENGINEERS AND IRONFOUNDERS

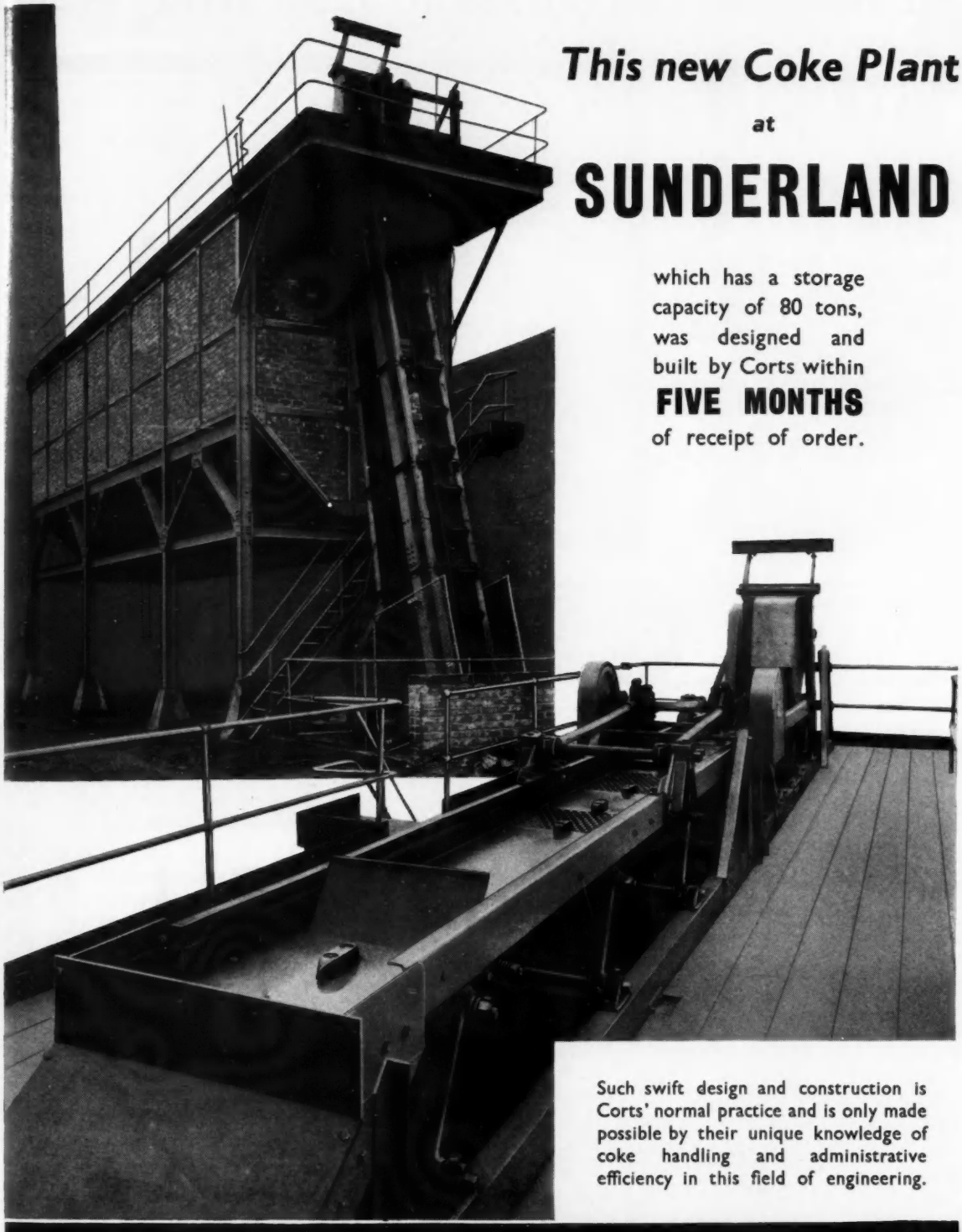
Head Office:
"Runnymede,"
Statford Road,
Henley-in-Arden,
Warwickshire

Also Offices at
LONDON
SOUTHAMPTON

Cast Iron Purifiers temporarily erected in our Works prior to despatch

Specialists in Tanks, Steel or Cast-Iron, Riveted or Welded, etc.

JAMES BRIDGE WORKS, DARLASTON



This new Coke Plant

at

SUNDERLAND

which has a storage capacity of 80 tons, was designed and built by Corts within

FIVE MONTHS

of receipt of order.

Such swift design and construction is Corts' normal practice and is only made possible by their unique knowledge of coke handling and administrative efficiency in this field of engineering.

ROBERT CORT & Son Ltd

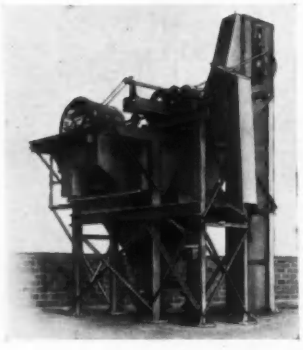
READING · ENGLAND

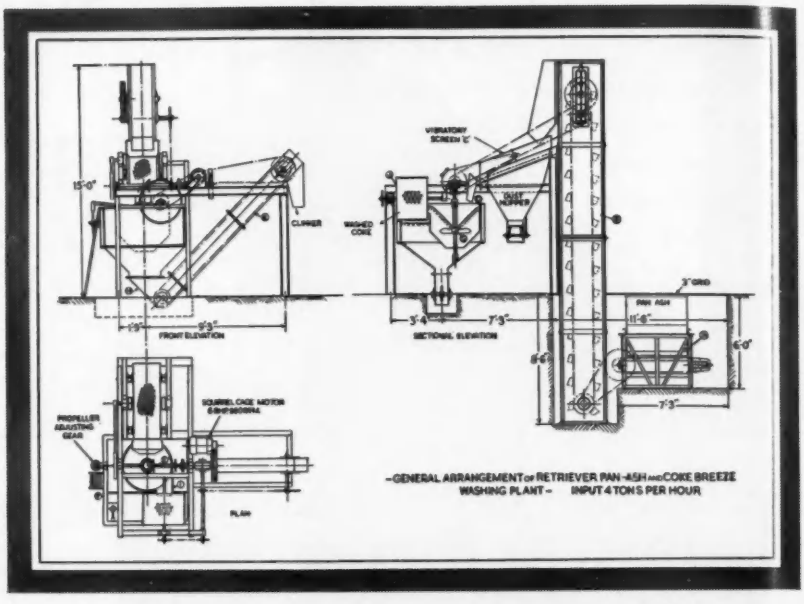
Telephone: Reading 5046 (5 lines) Telegrams: Corts, Reading

COKE RECOVERY FROM PAN ASH ALSO COKE BREEZE WASHING

by the improved

"RETRIEVER"
(REGISTERED TRADE MARK)
WASHER





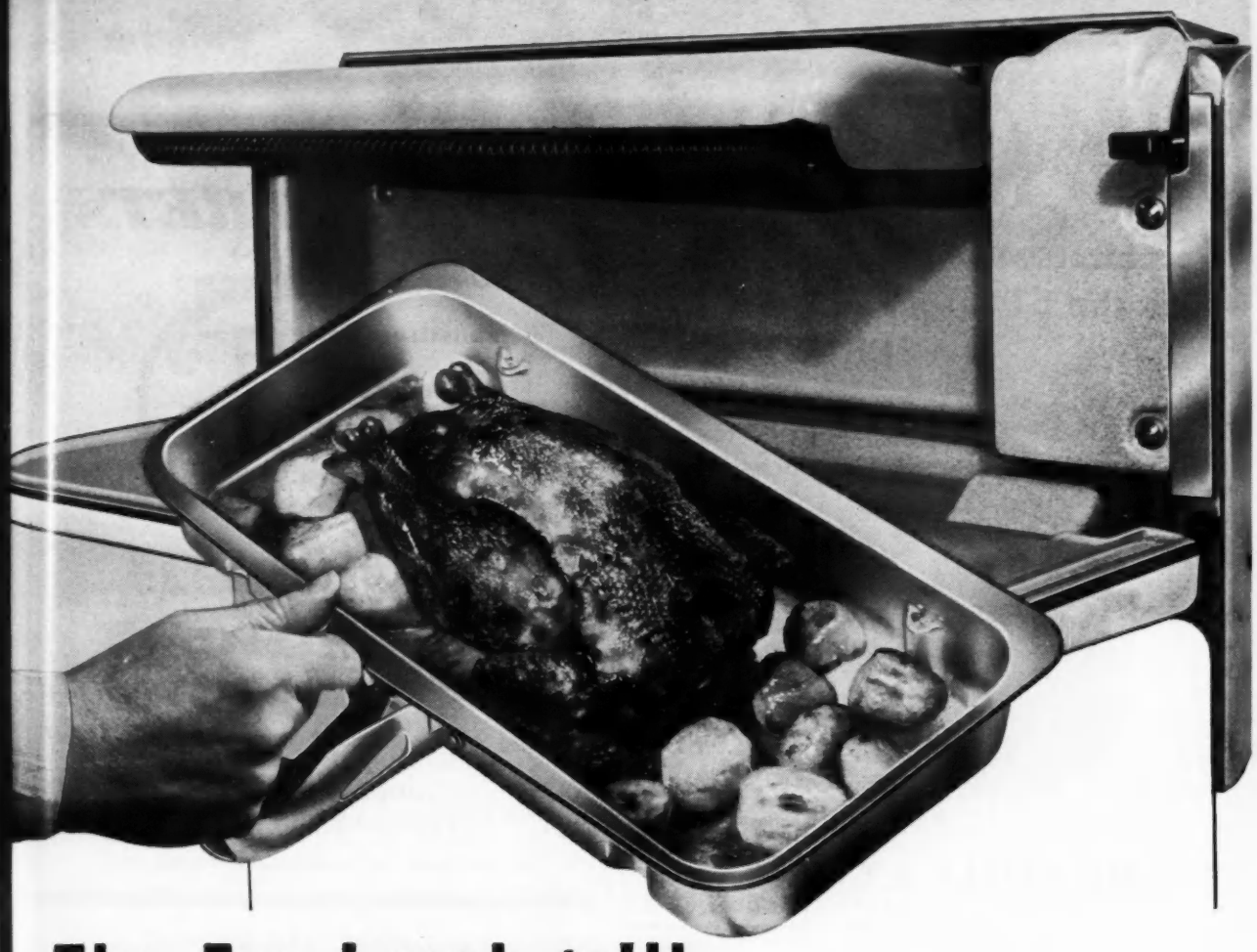
Sole makers

CLAPHAM BROS. LIMITED

MAKERS OF GAS WORKS EQUIPMENT SINCE 1837

KEIGHLEY-YORKS - Tel: 2787-2788 - Grams: "Clapham Bros., Keighley"

LININGS · SPLASHBACKS · TRAYS · LININGS · SPLASHBACKS · TRAYS · LININGS · SPLASHBACKS · TRAYS ·



The Eye-Level grill that will cook a chicken

Families of two or three people maintain a steady demand on the Poulterer for small chickens (Poussins) of about 2½ lb. in weight. The usual way of cooking is to roast or fry, but it is not practicable to grill a chicken whole, with the type of grill supplied with the normal domestic gas cooker because there is not sufficient depth to allow the bird to be cooked through without scorching.

The Cannon Eye Level Grill with its great depth between the grill pan and source of heat provides conditions similar to those required by the professional chef, and enables the housewife to enjoy many completely new ways of preparing everyday foods.

Much food is spoilt on normal grills because "Out of sight, is out of mind." The time factor between done, over-done and burnt is not highly critical with the Cannon Eye Level Grill and cooking progress can be watched from anywhere in the kitchen.

THE FOLDAWAY EYE-LEVEL GRILL

Exclusive to the

cannon

A125

CANNON (GA) LTD. · DEEPFIELDS · BILSTON · STAFFS.

London Office: 4 Park Lane, W.1. Tel: HYDe Park 4861-2

M & M PATENT
METER LOCKS

use the STRONGEST, SAFEST METER LOCK

- **DON'T** buy locks you may have to scrap in a few years
- **DON'T** look only at the initial cost
- **DON'T** think only of the present time; look to the future
- **DO** remember that good quality is cheapest in the long run
- **DO** take our word for it that our workmanship is consistently good
- **DO** profit by others' experience and use M. & M. Locks to protect your meters

H. MITCHELL & CO.
36, 38, NEW CHARLES STREET, LONDON, E.C.1

GRILL FRETS

- **There is no satisfactory substitute for genuine Chrome steel . . . .**

CHROME GRILL FRETS

are available for all types of gas cookers.

H. B. DREW LIMITED.
BIDEFORD AVENUE,
PERIVALE, GREENFORD.

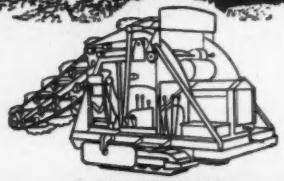
Telephone: Perivale 3238. Telegrams: Gasfret, Greenford, Middlesex.

12/21 MODEL FOR NARROW TRENCHES

The answer to all your trenching problems

ALLEN *Super Duty* TRENCHERS

For narrow trenches we supply the 12/21 model, and for wide trenches the 16/60 model. Both models are a fine engineering job and capable of standing up to continuous hard work. We shall be pleased to send you further information and fully illustrated brochures on request.



16/60 TRENCHER

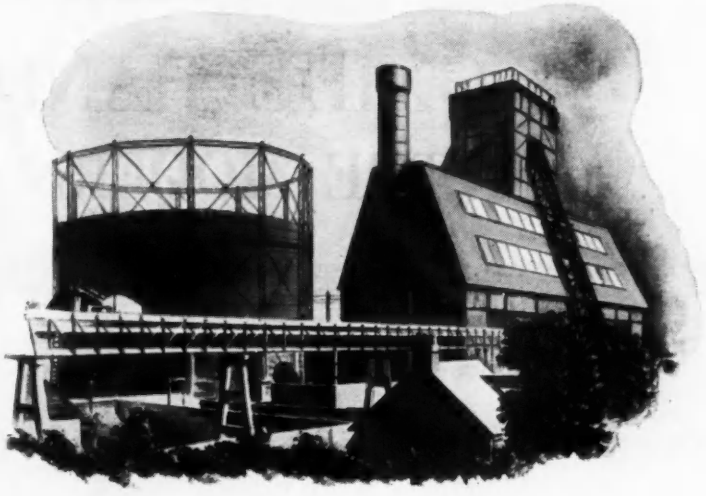
JOHN ALLEN & SONS (OXFORD) LTD. COWLEY OXFORD *Tel 77155/6/7*

Wheels of industry the world over are turned

by

B T-H

ELECTRIC MOTORS



in the gas works

Whenever a power drive is needed, there is a BTH motor that will do the job efficiently and economically. In industries all over the world, BTH motors are helping to increase production. Over half-a-century's experience of this branch of electrical engineering enables BTH to offer the motor with the mounting, enclosure, rating and performance best suited to the application.

BTH factories are exceptionally well equipped to make both ***STANDARD*** *and* ***SPECIAL*** *machines in large quantities*

THE
BRITISH THOMSON-HOUSTON
COMPANY LIMITED, RUGBY, ENGLAND

Member of the AEI group of companies

4736

HUWOOD

OXIDE HANDLING
THE MODERN WAY

OXIDE HANDLING TRANSPORTER
WITH COVER LIFTING EQUIPMENT

Special Features of this plant :

- **Elevator in Aluminium**
- **Gravity-weighted Cable Reeling Drum**
- **Abrasive Rubber Covered Belt Idlers**
- **Cover Over Loading Operations**
- **Anti Corrosive Treatment of Structure**

MECHANICAL HANDLING PLANT FOR THE COKE AND GAS INDUSTRIES

Head Office and Factories : HUGH WOOD & CO. LTD. GATESHEAD-ON-TYNE, 11

Telegrams : HUWOOD, GATESHEAD. *Telephone :* LOW FELL 76083 (5 lines).

Industrial and Export Office : DASHWOOD HOUSE, 69, OLD BROAD STREET, LONDON, E.C.2.

Telegrams : HUWOOD AVE, LONDON. *Telephone :* LONdon Wall 6631-2-3

Because each member of the Ward Group of Companies can call on any of the others to supplement its knowledge and experience, the competence of the entire group is immeasurably increased.

A PICTURE OF INDUSTRIAL SERVICE

Here is a picture of interdependence with a real practical meaning. It is the modern interpretation of the picture Thos. W. Ward must have had in mind when he started his business 75 years ago—a visualisation of closely integrated manufacturing resources and service departments united in the common task of helping in the development of industry and commerce. As the scope of the Ward Group's activities has extended, so has its capacity for serving its many customers throughout the world.

The T.W.W. Service Includes :-

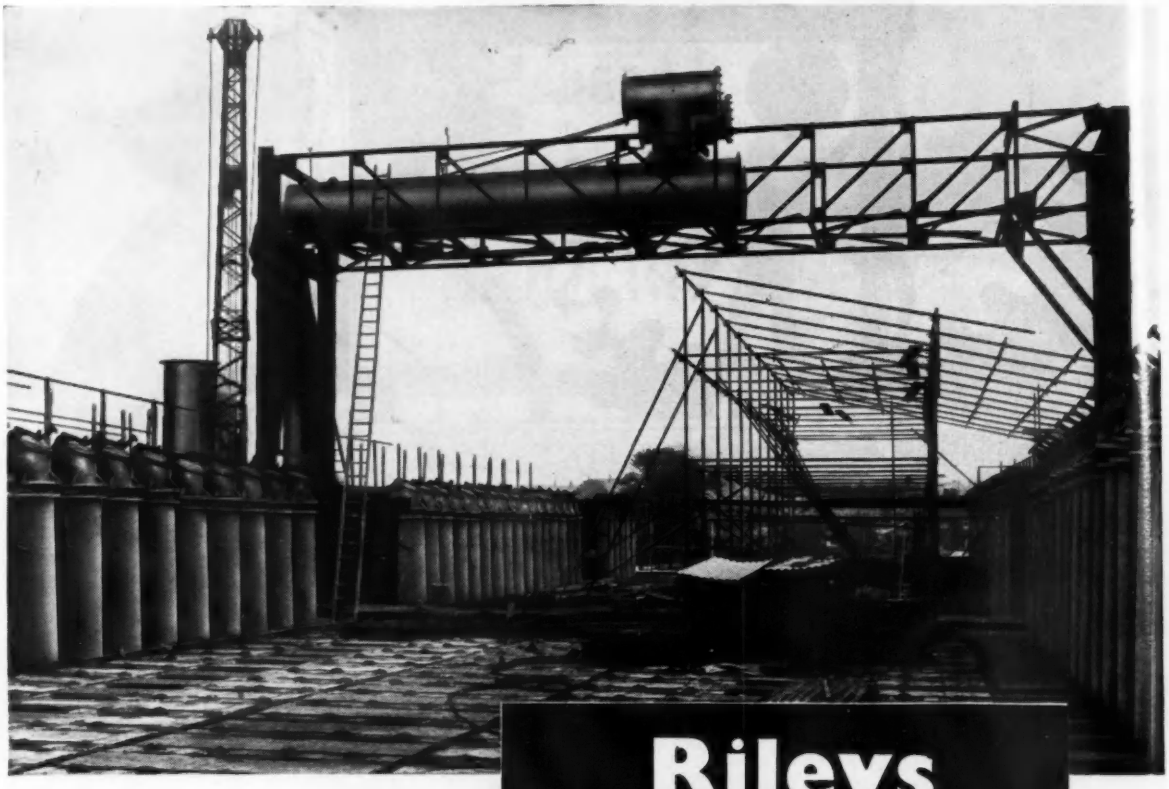
IRON AND STEEL · NON FERROUS METALS · PLANT & MACHINERY · TRACTORS & EARTH MOVING PLANT · FOUNDRY PLANT & SUPPLIES · CONTRACTORS' PLANT & EQUIPMENT · EXCAVATORS & CRANES · INDUSTRIAL PLANT · STRUCTURAL STEELWORK CEMENT · GRANITE & FREESTONE · ROADSTONE & ROADMAKING · INDUSTRIAL DISMANTLING · RAILS & SIDINGS SHIPBREAKING · WIRE & WIRE PRODUCTS · NUTS & BOLTS · PACKINGS & JOINTINGS · INSULATING MATERIALS FOOD PREPARING MACHINERY · FACTORY PLANNING & INSTALLATION

THOS. W. WARD LTD.

ALBION WORKS · SHEFFIELD

AND LONDON, GLASGOW, MANCHESTER, BIRMINGHAM, LIVERPOOL, BRISTOL, GRAYS, WISHAW, PRESTON, BARROW, BRITON FERRY MIDDLESBROUGH, MILFORD HAVEN, INVERKEITHING ANTWERP, PARIS, BOMBAY, CALCUTTA, SYDNEY, AND STOCKHOLM

GP/39



Rileys of Batley

5 Unit Tubular Condenser
10' high. Weight 4½ tons.

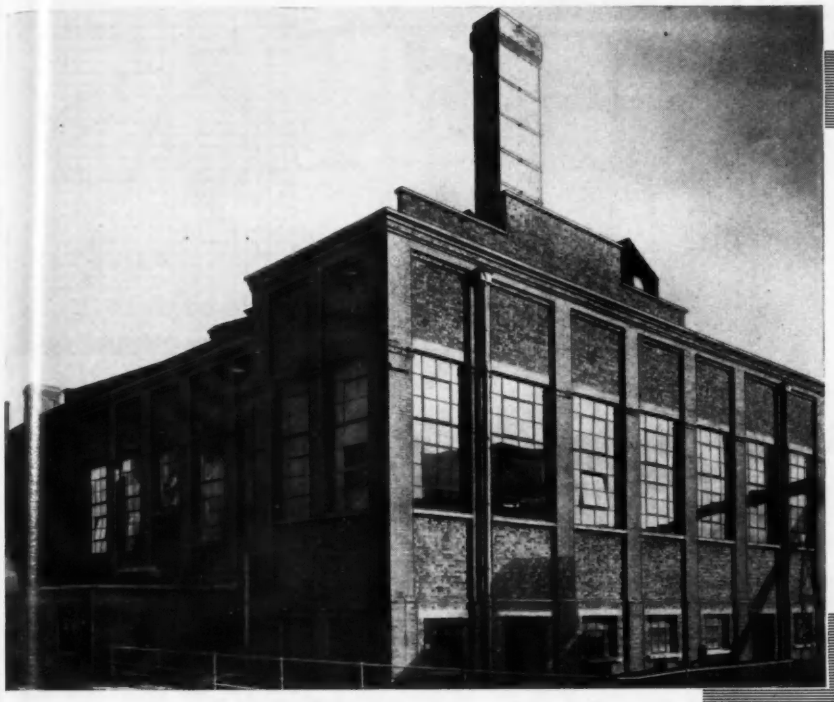
Engineers to the Gas and Allied Industries

Also specialists in the production of welded fabrications, riveted work, etc.

The above illustration (shown by permission of the Woodall Duckham Construction Co. Ltd). shows the erection of the offtake and suction mains over the battery and the pullman valves and ascension pipes to the collecting mains. In the background scaffolding has been erected for a temporary roof over the battery. We invite your enquiries whether they be for construction work, extensions, or entirely new installations. We have 65 years of specialised experience.

A. J. RILEY & SON LIMITED
VICTORIA WORKS, BATLEY, YORKSHIRE
Telephone: Batley 657 (3 lines). Telegrams: Boilers, Batley.

IN ASSOCIATION WITH JAMES AUSTIN & SONS (DEWSBURY) LTD.



Serving the Gas Industry

GIBBONS BROTHERS LIMITED,

Contractors for :-

CARBONISING PLANT

CHARGING MACHINES

COAL AND COKE HANDLING PLANT

COKE OVENS

DRESSLER TUNNEL KILNS

FURNACES AND HANDLING PLANT

GAS PRODUCERS

GAS WORKS PLANT

GIBBONS (Dudley) LIMITED.

Manufacturers of : –

- Complete range of refractory goods for gas retort settings and coke ovens in fireclay, silica and siliceous qualities.

GIBBONS

DIBDALE WORKS, DUDLEY, WORCESTERSHIRE: Telephone : DUDLEY 3141.

See the latest equipment for speeding production at Britain's fourth

MECHANICAL HANDLING

EXHIBITION & CONVENTION

OLYMPIA · LONDON · 9-19 JUNE 1954

MECHANICAL HANDLING is so important that no industry can function properly without it; unnecessary work is eliminated, bottlenecks are overcome, and production is increased many-fold. Britain's Mechanical Handling Exhibition and Convention—held every second year—is the biggest of its kind in the world. Nowhere else can you see such a comprehensive range of equipment, or hear experts in so many industries discuss the latest machines and methods.

This year's Exhibition will demonstrate the enormous strides made in handling techniques during the last two years, and bring to the Convention platform Britain's leading mechanical handling engineers who will point the way to higher output at lower cost. Plan *your* visit today! Post the coupon for full particulars.

The world's largest display of
Conveyors, elevators, hoists, stackers, cranes, mechanical loaders and shovels, fork lift trucks, industrial trucks, coal handling plants, overhead runways, aerial ropeways, grain handling plant, wagon tipplers, pneumatic installations and ancillary equipment.

Many working exhibits.
So vast is this exhibition that ample floor space is provided for much of the equipment to be demonstrated under working conditions.

Special Facilities:
Full information service; free consulting bureau; overseas visitors' reception and lounge; industrial cinema; post office, etc.

Organized by 'MECHANICAL HANDLING'—the journal of industrial mechanization

To: "Mechanical Handling," Dorset House, Stamford Street, London, S.E.1.

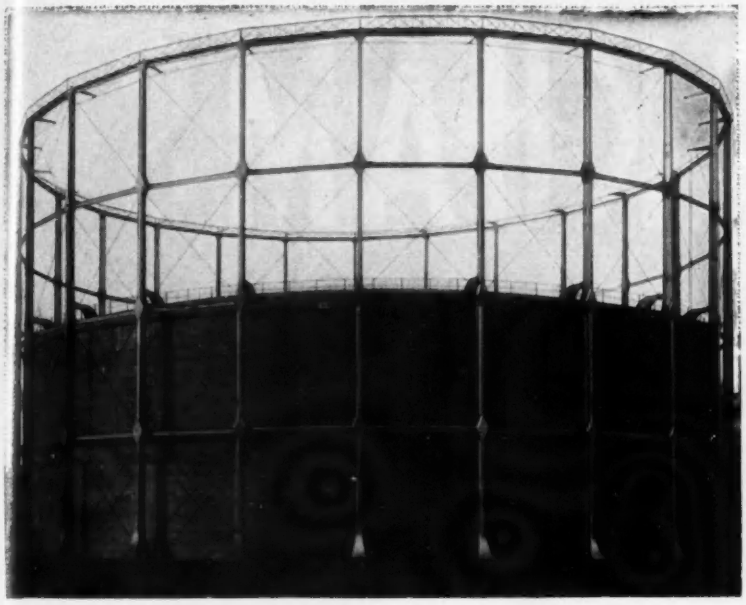
Please send me the 1954 Exhibition Brochure with details of Convention, free season ticket, etc.

NAME .....

ADDRESS .....

.....

M



3-LIFT FRAME GUIDED GASHOLDER 205' DIA. × 40' DEEP, 3¾ MILLION CU. FT. CAPACITY. BATH

181

GASHOLDERS

* GUIDE FRAMED
* SPIRAL
* WATERLESS
* HIGH PRESSURE
* REPAIRS AND INSPECTION

80 YEARS EXPERIENCE

Unequalled Service

GASHOLDERS AND TANKS OF ANY SIZE AND DESIGN RIVETTED OR WELDED

CLAYTON SON & CO., LTD.,
HUNSLET · LEEDS · 10

BENHAM

GAS KITCHEN INSTALLATIONS

Another example of a kitchen equipped with Benham Cooking Apparatus

The Orchard Hotel, Ruislip

Benham and Sons Limited · 66 Wigmore Street · London, W.1

Telephone: WELbeck 9253 (17 Lines)

BIRMINGHAM · BOURNEMOUTH · BRIGHTON · MANCHESTER · CARDIFF · GLASGOW · YORK

KIRKHAMS of MANSFIELD

invite your enquiries for

GAS PLANT

PURIFIERS
WASHERS
CONDENSERS
PREHEATERS
BENZOL PLANTS
TAR EXTRACTORS

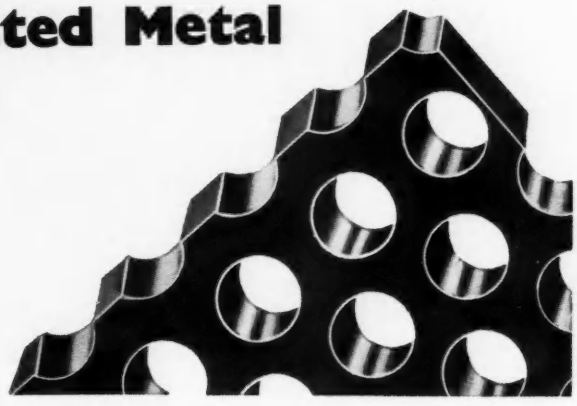
KIRKHAM, HULETT & CHANDLER, LTD · UNION FOUNDRY · MANSFIELD
STAFFORD HOUSE · NORFOLK STREET · STRAND · LONDON · W.C.2
MANSFIELD 1256-7 TEMPLE BAR 9910

For Gruelling Service

For over seventy years, Harveys have been making Perforated Metal and Woven Wire for every conceivable purpose, in every kind of metal. 'Harco' Screens are designed to give maximum output over prolonged periods and under the most exacting conditions.

'Harco' Perforated Metal & Woven Wire

Send for Catalogues No. GJ 269 and 782.



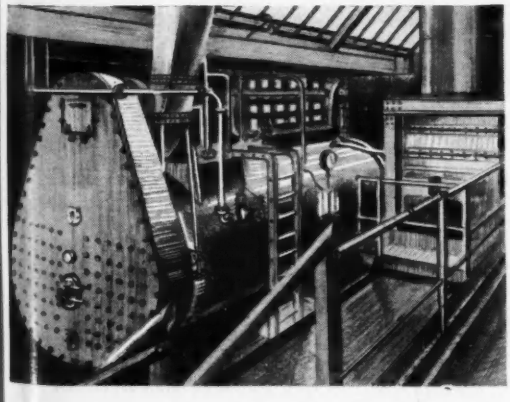
Harvey

G. A. HARVEY & Co. (LONDON) LTD.,
Woolwich Road, London, S.E.7.
Telephone : GREenwich 3232 (22 lines)

Fuel Saved

is the main criterion of

Spencer - Bonecourt



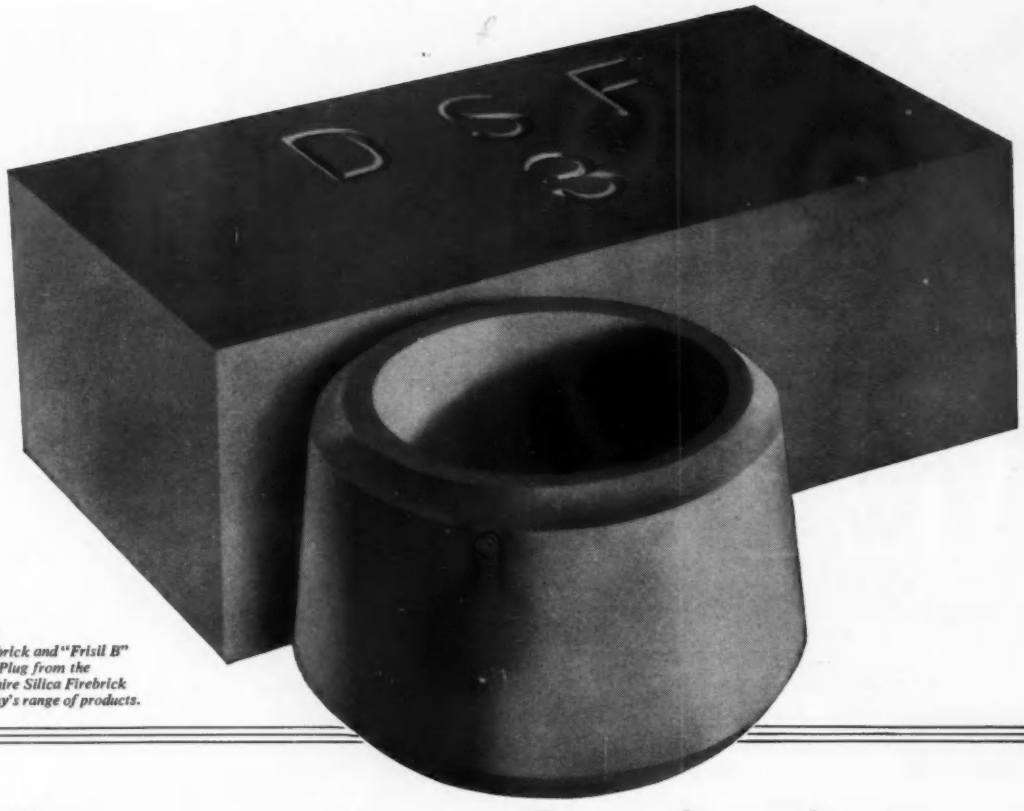
Waste Heat Recovery Systems

Already more than 3,000,000 tons of fuel are saved annually by Spencer - Bonecourt installations designed to meet the needs of diverse industries. A survey of your Works might reveal possibilities of a major reduction in the fuel account to your own and the national advantage.

A Spencer - Bonecourt Specialist is at your service, **NOW.**

SPENCER - BONECOURT LTD., 14, Fetter Lane, London, E.C.4

Telephone : CENtral 0481/2 Telegrams : "Bonecourt, Fleet, London"



D.S.F.3
Square brick and "Frisil B" Nostril Plug from the Derbyshire Silica Firebrick Company's range of products.

The greater the insistence on furnace efficiency, the greater the need for

DERBYSHIRE SILICA REFRACTORIES

DERBYSHIRE "S" and "D.S.F."
(*90% Silica*)

Refractories for all purposes including Vertical and Horizontal Retorts, Soakers, Puddling Furnaces, Reheating and Annealing Furnaces, Forge Furnaces, Checkers, Cupolas and Glass Furnaces.

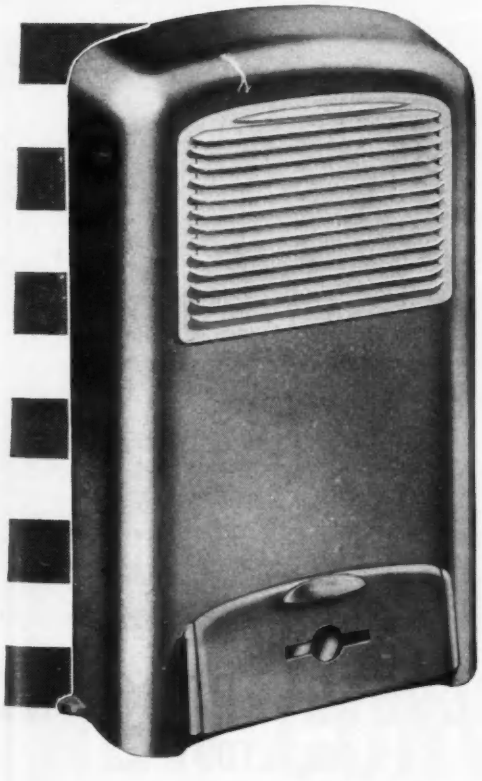
Other D.S.F. products include
PEAKSIL (*95% Silica*) FRISIL (*Sillimanite*)
DUROSIL
(*The new British Plastic Refractory*)
and DOME INSULATION (*Diatomite*)

DSF
DERBYSHIRE SILICA FIREBRICK CO., LTD.
FRIDEN · HARTINGTON · NEAR BUXTON · DERBYSHIRE
Grams: Silica, Friden, Hartington. 'Phone: Youlgrave 271 (3 lines)

T.A. 4/73

YOU'VE GOT TO CALL A *HALT* SOMEWHERE

Sooner or later, the brake *must* go on rising costs, and Radiant Heating Ltd. — taking a lead — have reduced, by a quarter, the list price of their popular "Floortherm" convector heater.



Modern production methods combined with careful planning, have made possible this reduction, and there is an ever increasing demand for this highly efficient appliance. The body of the Floortherm is now manufactured in one piece, in a variety of pleasing shades and, being vitreous enamelled, it will not scratch or deteriorate.

This heater has an overall efficiency of 90%, is cheap to install and economical to run. It is capable of heating up to 2,250 cu. ft. of space, with an input of 10,000 B.Th.Us. per hour.

Heating engineers, architects and contractors are *now*, more than ever, specifying the "FLOORTHERM" in their building and conversion schemes.

You are invited to inspect the Floortherm on stand No. 18, at the Gas Sales and Service Conference Exhibition, Southport.

Write or 'phone today for illustrated literature and further details.

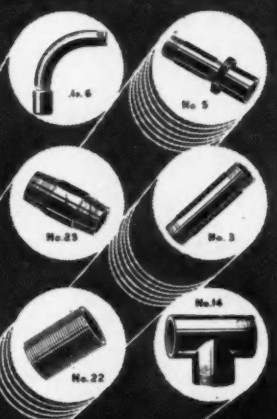
RADIANT HEATING LTD

RADIANT WORKS · BARNSBURY PARK · LONDON N.1 · *Tel: NORTH 1677 (3 lines)*

STEEL TUBES & FITTINGS

FOR

Gas, Water & Steam



TRADE MARK

RUSSELL BROS (WALSALL) LIMITED

BRADFORD TUBE WORKS · WALSALL · ENGLAND

The Bradford Tube Works occupies a factory area of some three acres exclusively devoted to the manufacture of Steel Tubes and Fittings.

Contractors to Admiralty and War Office. Extensive stocks.

SM/RB 1008/2

FLUXITE

SOLDERING

FLUID

Adding fame to a great name!

SIMPLIFIES ALL SOLDERING

The standard sizes are :—
4 fluid ozs. 8 fluid ozs. 20 fluid ozs. 1 Gallon Cans.

A GOOD COMPANION TO THE WORLD-FAMOUS

FLUXITE SOLDERING PASTE

FLUXITE LTD.,

DRAGON WORKS, BERMONDSEY ST., LONDON, S.E.1. TEL: HOP. 2632

EXPORT ENQUIRIES INVITED

Gunite

One of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking.

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have exceptional value.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied.

For lining coal bunkers and steel chimneys it possesses great resistance to corrosion and protects steel-work from the abrasive action of coal or coke.

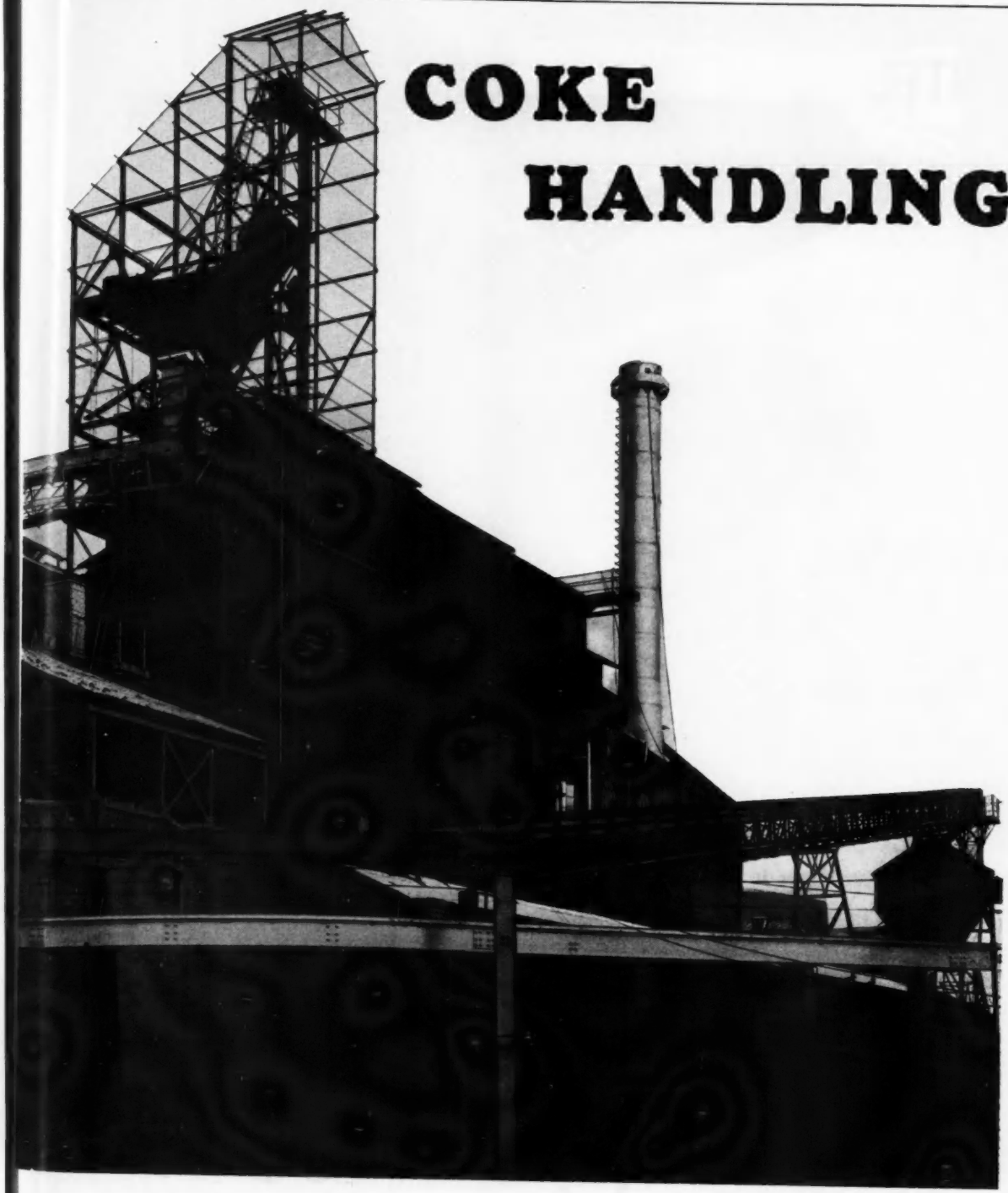
Handbook "GUNITE" sent on request

THE CONCRETE PROOFING CO., LTD.

100, VICTORIA STREET, S.W.1

Telephone : Victoria 7877 & 6275

COKE HANDLING



NEW CONVEYOR Co. LTD.

BROOK STREET, SMETHWICK

CINTEL
REGD. TRADE MARK

The 'CINTEL' PORTABLE
METAL DETECTOR is
still the best method of locating stop-cock
boxes, manhole covers, etc., the exact
positions of which are unknown. And with the aid of
an oscillator attachment, pipes buried to a depth of 30 feet
can be easily located and their routes traced.
This instrument is used today by most of the principal gas
and water undertakings in the country and full details
will be sent to you on request.

Cintel

CINEMA-TELEVISION Ltd.
WORSLEY BRIDGE ROAD · LONDON · SE26
Telephone HITher Green 4600
A Company within the J. Arthur Rank Organisation

SALES AND SERVICING AGENTS: F. C. Robinson & Partners Ltd., 287 Deansgate, Manchester, 3 · Hawnt & Co., Ltd., 59 Moor St., Birmingham, 4 · Atkins, Robertson & Whiteford Ltd., 100 Torrisdale Street, Glasgow, S.2

Where industrial processes cause excessive fumes, smoke, steam and heat, adequate ventilation can easily be provided by installing Hills Patent Roof Ventilating Shutters. These shutters undoubtedly offer the simplest, most efficient and economical system of workshop ventilation, equally suitable for new or existing buildings. Touch a button, and the shutters will open up to an angle of 65 degrees in 60 seconds. Fresh air *rapidly* replaces stagnant air and smoke. Work goes on without a break—every hour of a worker's time can be made profitable. The Shutters will save their cost in a few months, and will last a lifetime. A postcard to our Technical Advisory Department will bring you full particulars by return.

★ **HILLS INDUSTRIAL VENTILATORS** *include power-operated Roof Ventilating Shutters, Stack Roof Ventilators for fitting with patent glazing bars or corrugated roof sheets and Wall-type Air Inlet Ventilators for fixing into an opening 8 ft. wide by 6 ft.*

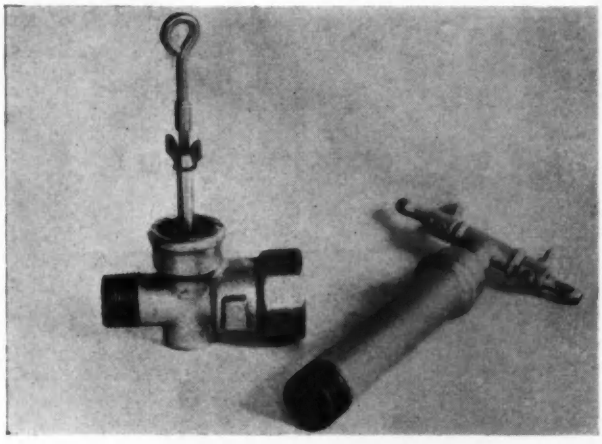
CLEAR THE AIR WITH

HILLS roof ventilating shutters

HILLS (WEST BROMWICH) LIMITED, ALBION ROAD, WEST BROMWICH, STAFFS. Telephone: West Bromwich 1025 (7 lines).
LONDON: 125 HIGH HOLBORN, W.C.1. Tel.: Holborn 8005/6. *Branches at Birmingham, Bristol, Leeds, Manchester, Newcastle-on-Tyne, Glasgow and Belfast.*

FLEXIBLE SERVICE FITTINGS

up to 2 in. Diameter



ADJUSTABLE FLEXIBLE LEADLESS SPLIT COLLARS

Sizes 2″ to 18″ Diameter.

Special Long Collars for Perforated Steel Mains.

LEAK CLAMPS

for

CAST IRON and STEEL PIPE SOCKETS

Sizes 3″ to 48″.

FLEXIBLE PIPE COUPLINGS for STEEL and C.I. PIPE.

SIDE SERVICE TEE FOR NEW SERVICES
Patent applied for. Made under Licence.
PERMITS SERVICE PIPE FROM MAIN TO BE TESTED.

BUNN & JOHNSON LTD.
Cambridge Road, HITCHIN, Herts.
Phone : Hitchin 933 & 926

UNDERPRESSURE ENGINEERING CO., LTD.

UNDERPRESSURE CONNECTIONS
SPLIT COLLARS
SOCKET CLIPS

UNION FOUNDRY, MANSFIELD, NOTTS.
ALL TYPES OF DISTRIBUTION MATERIAL IN STOCK

Service Enquiries :
STAFFORD HOUSE, NORFOLK STREET, STRAND, W.C.2.
'Phone: MANSFIELD 1256. *'Grams:* CASTINGS. MANSFIELD.
'Phone: TEMPLE BAR 9910. *'Grams:* WASHER. ESTRAND. LONDON

CENTRAL ACTION DRILL STANDS
SERVICE CLEANSERS
TOOLS, ETC.

COAL AND COKE SCREENING & SIZING PLANTS.

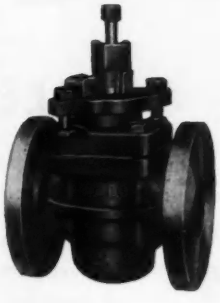
RETORT SETTINGS PRODUCERS, FURNACES REPAIRS.

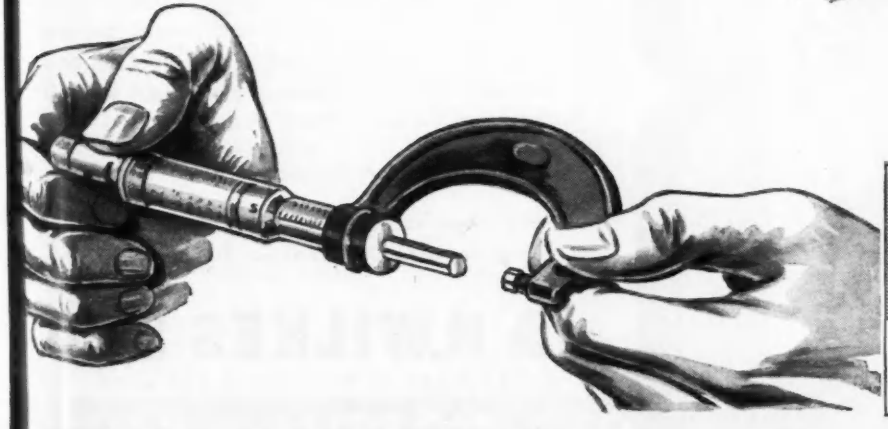
GOODALL, CLAYTON & Co. LTD.
— LEEDS. —

CONVEYORS, ELEVATORS, BUNKERS, ROOFS, HOISTS, Etc.

"If Tom says its O.K., *it is O.K.*"

PRACTICAL experience is the soundest way to true knowledge. Technicians who are in the best position to test and compare have long recognised the superior quality of Audco Lubricated Taper-Plug Valves and, over the years, more and more of the large organisations whose decisions they influence have placed their confidence in our products. This trust, whilst gratifying, is a constant spur in our endeavour to maintain and still further enhance the efficiency of our Valves and their value to the many industries it is our privilege to serve.

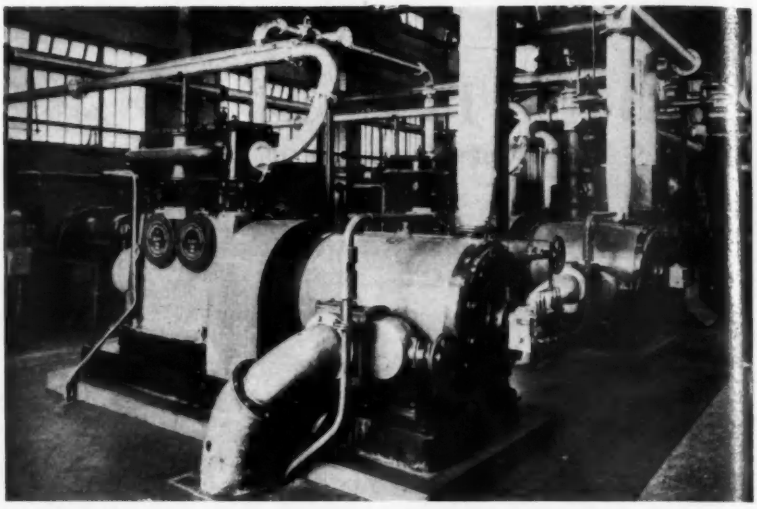




AUDCO
Lubricated
VALVES

AUDLEY ENGINEERING CO. LTD., NEWPORT, SHROPSHIRE

STEAM ENGINE DRIVEN ROTARY GAS BOOSTERS



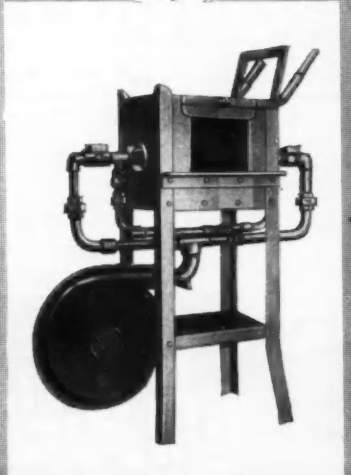
IN SERVICE 24 HOURS PER DAY BOOSTING ABOUT 1,250,000 CUBIC FEET PER DAY OF PURIFIED COKE OVEN GAS TO 13 LBS. PER SQUARE INCH PRESSURE FOR LONG DISTANCE TRANSMISSION FROM BIRCOTES NEAR DONCASTER TO WORKSOP.

By courtesy of the National Coal Board.
(Carbonisation Branch, East Midlands Division)

London Office:
119, Victoria Street, S.W.1.
Telephone: VICtoria 2612

WHITTAKER HALL & CO. (1929) LTD.
(DEPT. G.J.) BLACK LANE WORKS, RADCLIFFE, MANCHESTER.
Phone: RADcliffe 2421-2. Grams: Clutch. Radcliffe Manchester.

BRITISH ALCOSA PRODUCTS



THE PREMIER NAME IN THE INDUSTRIAL GAS WORLD

GAS FIRED FORGES PATTERN B 2140

Made in 3 sizes by A. H. WILKES—the Premier name in the Industrial Gas World—this excellent Forge is specially designed for general workshop use for the heat treatment of pipes, angles and other similar articles of various shapes and lengths up to 24". The Furnace is fitted with hinged top and back doors for easy operation and fired by twin burners and can be supplied complete with fan units to supply the necessary air blast.

Ideally suited for Technical College instruction.

We invite you to write today for details of this Forge and other Industrial Gas Equipment.

A.H.WILKES & CO.

A SUBSIDIARY OF WILLIAM ALLDAY & CO., LTD.
Head Office and Works :
"Alcosa" Works, Stourport-on-Severn, Worcestershire
Telephone : Stourport 311-4. Telegrams : Yadall, Stourport.

METAL FLOORING

The first complete manual of its kind. 84 pages of facts and figures that tell you all you want to know about Open Metal Flooring in all its applications.

The different types of steel and aluminium flooring and how to select them - Special non-slip flooring - Steel and concrete combined in solid floors - Unit-construction platforms - Methods of support - Methods of fixing - Stair and ladder treads - Decking for road bridges - Side walks - Truck steps - Surface reinforcements - Coal screening - Paint booths - Trench covers - Car wash - Handrailings and standards.

GET THE FACTS

Please send me my copy of the FISHOLOW FLOORING SYSTEMS manual, free and post free.

NAME .....

BUSINESS ADDRESS .....

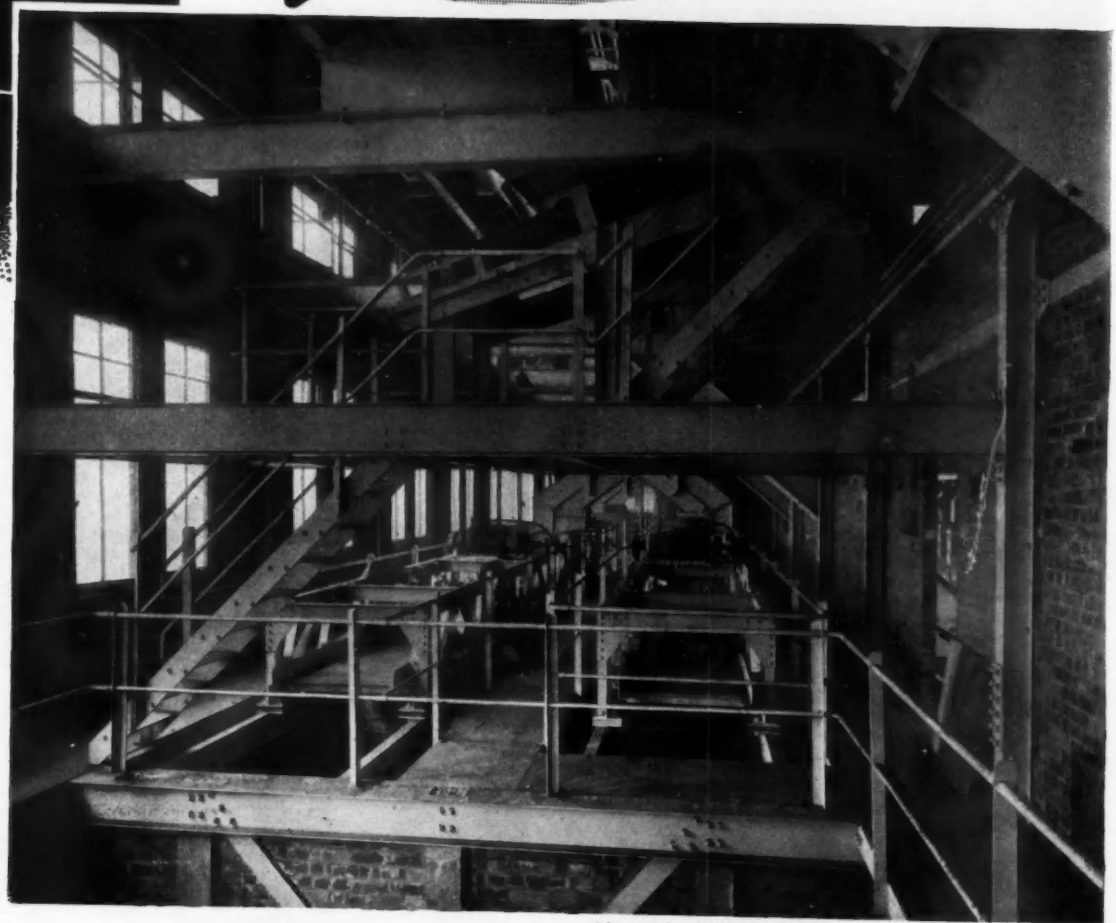
.....

(G.J.)

FISHER & LUDLOW LTD *MATERIAL HANDLING DIVISION*
BORDESLEY WORKS, BIRMINGHAM, 12 *Tel: VIC 2371*
Also at London. Manchester. Liverpool Cardiff. Glasgow. Newcastle-on-Tyne, Belfast and Dublin

C

DRAKES — for Dependability



Photograph published by the courtesy of the North Western Gas Board.

● **COKE SCREENING PAR EXCELLENCE—**
Unretouched photograph showing Four Reciprocating Coke Screens with trays in suspension built over Coke Hoppers.

DRAKES of HALIFAX

Telephone: Halifax 4701 P.B. Ex. *Telegrams: Drakefax, Halifax.*

CONSTRUCTIONAL GAS ENGINEERS FOR MORE THAN A CENTURY

JJM

INDEX TO 'JOURNAL' ADVERTISERS

A — PAGE

A.C.E. Machinery, Ltd. ... ...
Abbott, Birks & Co., Ltd. ... ...
Acme Wringers, Ltd. ... ...
Aerogen Co., Ltd. ... ...
Aerograph Co., Ltd. ... ...
Alder & Mackay, Ltd. ... ...
Alexander Controls Ltd. ... ...
Allan Taylor (Engineers) Ltd., ...
Allen, John & Sons (Oxford) Ltd. 466
Amal, Ltd. ... ...
Ascot Gas Water Heaters, Ltd. ... ...
Ascot Gas Water Heaters, Ltd. (F.A. Neat) ...
Ashmore, Benson, Pease & Co. ... ...
Ashworth, Thos., & Co., Ltd. ... ...
Aspinall's (Paints), Ltd. ... ...
Associated Lead Manufacturers, Ltd. ... ...
Associated Lead Manufacturers, Ltd. (Rustodian)
Atlas Preservative Co., Ltd. ... ...
Audley Engineering Co., Ltd. 483
Autocontrol Boilers, Ltd. ... ...
Automatic Telephone & Electric Co., Ltd. ...
Automotive Products, Ltd. ... ...
Averill, C. R., Ltd. ... ...

B

Bale & Church, Ltd. 525
Balfour, Henry, & Co., Ltd. ... ...
Begwico Meters, Ltd. ... ...
Bell's Asbestos & Engineering, Ltd. ... ...
Benham & Sons, Ltd. 473
Blakeley Firth, Sons & Co., Ltd. ... ...
Booth, John, & Sons (Bolton), Ltd. ... ...
Bratt Colbran, Ltd. ... ...
Bray, George, & Co., Ltd. ... ...
Bray, W. E., & Co., Ltd. ... ...
British Flint & Cerium Manufacturers, Ltd. ...
British Gas Purifying Materials Co. ... ...
British Oxygen Co., Ltd. ... ...
British Paints, Ltd. ... ...
British Rototherm Co., Ltd. ... ...
British Thermostat Co., Ltd. ... ...
British Thomson Houston, Ltd. 467
British Vacuum Cleaner & Engineering Co., Ltd.
Broadbent, Thomas, & Sons, Ltd. ... ...
Brockhouse Heater Co., Ltd. ... ...
Broom & Wade, Ltd. ... ...
Brown, J., & Co., Ltd. 524
Bugden, Thos., & Co. ... ...
Bunn & Johnson, Ltd. 482

C

Cambridge Instrument Co., Ltd. ... ...
Cannon (G.A.), Ltd. 465
Cementation Co., Ltd. ... ...
Chamberlain Industries, Ltd. ... ...
Chaseside Engineering Co., Ltd. ... ...
Chemical Engineering Wiltons, Ltd. ... ...
Chemical & Insulating Co., Ltd. ... ...
Cinema-Television, Ltd. ... ... '480
Clapham Bros., Ltd. 464
Clayton, Son & Co., Ltd. 473
Clifford Engineering Co., Ltd. ... ...
Cochrane (Middlesbro') Foundry, Ltd. ... ...
Cohen, George, Sons & Co., Ltd. 519
Concrete Proofing Co., Ltd. 478
Consolidated Pneumatic Tool Co., Ltd. ... ...
Cort, Robert, & Son, Ltd. 463
Cox & Danks, Ltd. ... ...
Crane, Ltd. ... ...
Crone & Taylor, Ltd. ... ...
Crosby & Co. Ltd. ... ...
Crossley Bros. ... ...
Curtis, A. L., & Co. ... ...
Cutler, Samuel, & Sons, Ltd. 520

D

Davey, Paxman & Co., Ltd. ... ...
De la Rue, Thomas, & Co., Ltd. (Gas Group) ...
Dempster, R. & J., Ltd. 461
Dempster, Robert, & Sons, Ltd. 516
Denison & Son Ltd. ... ...
Derbyshire Silica Firebrick Co., Ltd. 476
Diaphragm & General Leather Co., Ltd. ... ...
Dick, R. & J., Ltd. ... ...
Donkin (The Bryan) Co., Ltd. ... ... Cover II
Douglas, Robert M., (Contractors), Ltd. ... ...
Douglas, William, & Sons, Ltd. ... ...
Drakes, Ltd. 486
Dresser Manufactures (England), Ltd. ... ...
Drew, H. B., Ltd. 466
Dunlop & Ranken, Ltd. ... ... Cover IV
Dunlop Rubber Co., Ltd. (Gen. Rubber Goods Division) ... ...

E

E.B. Refractory Cement Co., Ltd. ... ...
Edgar, William, & Son, Ltd. ... ...
Electroflo Meters Co., Ltd ... ...
Electrolux, Ltd. ... ...
Elliott Bros. (London), Ltd. ... ...
Ether, Ltd. ... ...
Evershed & Vignoles, Ltd. ... ...
Ewart Chainbelt Co., Ltd. ... ...
Expanded Metal Co., Ltd. ... ...

F

Fisher & Ludlow Ltd. 485
Flavel, S., & Co., Ltd. 462
Fluxite, Ltd. 478
Fowler, John, & Co. (Leeds), Ltd. ... ...
Frank Compressed Pile Co., Ltd. ... ...
Franklin Furnace Co., Ltd. ... ...

PAGE

Fry's Metal Foundries, Ltd. ... ...
Fyffe & Co., Ltd. ... ...

G

Gas Chambers & Coke Ovens, Ltd. ... ...
Gas Purification & Chemical, Ltd. 525
General Descaling Co., Ltd. ... ...
General Electric Co., Ltd. ... ...
General Gas Appliances, Ltd. ... ...
Gibbons Bros., Ltd. 471
Gibson, John, & Son, Ltd.... ... ...
Glover, George, & Co., Ltd. ... ...
Glover, Thomas, & Co., Ltd. 490
Goodall Clayton & Co., Ltd. 482
Goodyear Mechanical Goods ... ...
Gordon J. R. & Co., ...
Grant & West, Ltd. ... ...
Graphite Products, Ltd. ... ...
Green & Boulding, Ltd. 525
Gunite Construction Co.,Ltd. 524

H

Hattersley & Davidson ... ...
Hamilton, A. H., & Co., Ltd. ... ...
Hardman & Holden, Ltd. ... ...
Harris & Pearson, Ltd. ... ...
Harrisons (London), Ltd. 526
Harvey, G. A., & Co. (London), Ltd. 475
Hick Hargreaves & Co., Ltd. ... ...
Hilmor, Ltd. ... ...
Hills (West Bromwich), Ltd. 481
Holman, Michell & Co., Ltd. ... ...
Holmes, W. C., & Co., Ltd. 528
Hopkinsons, Ltd. ... ...
Honeywell-Brown, Ltd. ... ...
Horseley Bridge & Thomas Piggott, Ltd. ... ...
Horstmann Gear Co., Ltd. ... ...
Howden, James, & Co., Ltd. ... ...
Humphreys & Glasgow, Ltd. 488

I

Ideal Boilers & Radiators, Ltd. ... ...
I.C.I., Ltd. (Metals Division) ... ...
Inertol Co. Ltd. ... ...
Ingham, John, & Sons, Ltd. 489

J

Jeavons, E. E., & Co., Ltd. ... ...
Jeavons Engineering Co. ... ...
Jenkins, W. J., & Co., Ltd. ... ...
Johnson, C. H. (Machinery), Ltd. ... ...

K

Keay, E. C. & J., Ltd. 462
Keith Blackman, Ltd. 528
Kent, Geo. Ltd., ...
Kings Patent Agency, Ltd. 526
King, Walter, Ltd. 524, 525
Kirk & Co. (Tubes), Ltd. ... ...
Kirkham Hulett & Chandler, Ltd. 474

L

LaFarge Aluminous Cement Co., Ltd. ... ...
Laidlaw, R., & Son (Edin.), Ltd. ... ...
Lamont, James H., & Co., Ltd. ... ...
Lanarkshire Bolt & Rivet Co., Ltd. ... ...
Lancashire Dynamo & Crypto, Ltd. ... ...
Le Bas Tube Co., Ltd. ... ...
Lionweld, Ltd. ... ...
Lind, Peter, Ltd. ... ...

M

Magnetic Valve Co., Ltd. ... ...
Main, R. & A., Ltd. ... ...
Main Refrigeration Ltd. ... ...
Marco Conveyor & Engineering Co., Ltd. ... ...
Mechanical Handling 472
Meigh Castings, Ltd. ... ...
Meltham Silica Fire Brick Co., Ltd. ... ...
Mercol Products, Ltd. ... ...
Messenger & Sons, Ltd. ... ...
Meters Ltd. ... ...
Metropolitan Leather Co., Ltd. ... ...
Milnes Meters, Ltd. ... ...
Mint, Birmingham, Ltd. ... ...
Mitcham Smelters, Ltd. 526
Mitchell Engineering Ltd. ... ...
Mitchell, H., & Co. 466
Moler Products, Ltd. ... ...
Monitor Engineering & Oil Appliances, Ltd. ... ...
Monk, A., & Co., Ltd. ... ...

N

National Benzole Co., Ltd.... ... ...
National Enamels, Ltd. 464
New Conveyor Co., Ltd. 479
Newton Chambers & Co., Ltd. ... ...
Norwest Construction & Co., Ltd. ... ...
Nu-Swift, Ltd. 525

O

Oxley Engineering Co., Ltd. ... ...

P

Parkinson & Cowan (Gas Meters), Ltd. 490
Parkinson Stove Co., Ltd. 515
Pass, E., & Co., Ltd. ... ...
Peckett & Sons, Ltd. ... ...
Peebles & Co., Ltd. ... ...
Pegson, Ltd. ... ...
Perl Controls, Ltd. ... ...
Power Gas Corporation, Ltd. ... ...

PAGE

Pratt Engineering Co. ... ...
Press, William, & Son, Ltd. ... ...
Pulsometer Engineering Co., Ltd. ... ...

R

R.T.S.C. Home Sales, Ltd. ... ...
Radiant Heating, Ltd. 477
Radiation, Ltd. 508, 509
Rawlplug Co., Ltd. ... ...
Reavell & Co., Ltd. 524
Remington Rand Ltd., ...
Richmond Welding Co. 526
Ride & Bell, Ltd. ... ...
Riley, A. J., & Son, Ltd. 470
Roberts, R. E., & Sons, Ltd. ... ...
Robinson, J. H., & Co. (Liverpool), Ltd. ... ...
Rook Bros., Ltd. 525
Rotameter Manufacturing Co., Ltd. ... ...
Royston, Geo., & Son, Ltd. ... ...
Russell Bros. (Walsall), Ltd. 478
Russell, R., & Sons, Ltd. ... ...

S

Salter, T. E., Ltd. ... ...
Senior Economisers, Ltd. ... ...
Shelton Iron, Steel & Coal, Co., Ltd. 523
Siebe Gorman & Co., Ltd.... ... ...
Siemens-Schuckert (Great Britain), Ltd. ... ...
Sigma Instrument Co., Ltd. ... ...
Sigmund Pumps, Ltd. ... ...
Simon-Carves, Ltd. ... ...
Simon, Richard, & Sons, Ltd. ... ...
Sisson, W., & Co., Ltd. ... ...
Smith Meters, Ltd. ... ... Facing p. 500
Smith, Thos., & Sons (Rodley), Ltd. ... ...
Soil Mechanics, Ltd. ... ...
Spencer Bonecourt, Ltd. 475
Sperryn & Co., Ltd. ... ...
Stanton Ironwork Co., Ltd. ... ...
Staveley Iron & Chemical Co., Ltd. ... ...
Steels Eng. Products Ltd. ... ...
Stein, John G., & Co., Ltd. ... ...
Stelcon (Industrial Floors), Ltd. ... ...
Stewart & Gray, Ltd. ... ...
Stewarts & Lloyds, Ltd. ... ... Facing p. 501
Stoves, Ltd. ... ...
Strachan & Henshaw, Ltd.... ... ...
Stringer Bros. ... ...
Sugg, Wm., & Co., Ltd. ... ...
Summerson, Thos. & Sons Ltd. ... ...
Sutcliffe Speakman & Co., Ltd. ... ...
Sutherland, A. G., Ltd. ... ...

T

Tangyes Ltd., ...
Thermal Syndicate, Ltd. ... ...
Thomas & Bishop, Ltd. ... ...
Thomas (Richard) & Baldwins, Ltd. ... ...
Thompson, John, Conveyor Co. ... ...
Thorp, Thomas, & Co., Ltd. ... ...
Tucker, Eyelet, Geo., Co., Ltd. ... ...
Tully, Sons & Co., Ltd. ... ...
Turners Asbestos Cement Co., Ltd. ... ...

U

Underpressure Engineering Co., Ltd. 482
United Kingdom Construction & Engineering Co., Ltd. ... ...

V

Vale, Thomas, & Sons, Ltd. ... ...
Vaughan, Edgar & Co. Ltd. ... ...
Visco Engineering Co., Ltd. ... ...
Vulcan Stove Co., Ltd. ... ...

W

Wakelin, F. H., Ltd. ... ...
Walker, C. & W., Ltd. 520
Walker, Crosweller & Co., Ltd. ... ...
Wallach Bros., Ltd. ... ...
Waller, George, & Son, Ltd. ... ...
Ward, Thos. W., Ltd. 469
Weatherill, F. E., Ltd. ... ...
Weir, G. & J., Ltd. 524
Wellington Tube Works, Ltd. ... ...
Wellman Smith Owen Engineering Corpn., Ltd. ...
West's Gas Improvement Co., Ltd. ... Cover III
West Hunwick Silica & Firebrick Co., Ltd. ... ...
West's Piling & Construction Co. ... ...
Westwood & Wrights, Ltd. ... ...
Whessoe, Ltd. ... ...
Whittaker Hall & Co. (1929), Ltd. 484
Wilkes, A. H., & Co., Ltd. 484
Willey & Co., Ltd. ... ...
Williams, John E., Ltd. ... ...
Williamson Cliff, Ltd. ... ...
Wilson, George, Gas Meters, Ltd. ... ...
Winn & Coales, Ltd. ... ...
Woodall-Duckham Construction Co., Ltd. Cover I
Wood, Hugh, & Co., Ltd. 468

Y

Yorkshire Copper Works, Ltd. ... ...

Agency 526
Appointments Vacant 525, 526
Appointment Wanted 526
Contracts Open ... ...
Educational ... ...
Fellowship ... ...
Miscellaneous 525
Notice ... ...
Patents 526
Plant &c. Wanted ... ...
Plant For Sale 526
Publications ... ...
Research Scholarship ... ...

H&G

INSTALLATIONS ABROAD

Carburetted Water Gas Plant
at the new Oran Gas Works
of

ÉLECTRICITÉ ET GAZ D'ALGÉRIE

HUMPHREYS & GLASGOW LTD.

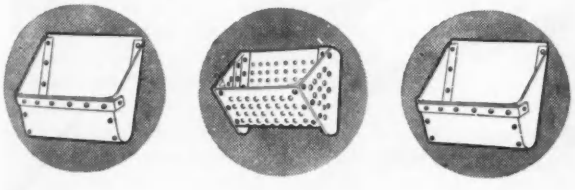
HUMGLAS HOUSE · CARLISLE PLACE · LONDON SW1

Telephone: VICtoria 3961

ESTABLISHED 1892

Exact Duplication...

If we had idle moments, then they might be spent in this way. At the moment, our preoccupation is concerned exclusively with the Exact Duplication of Elevator Buckets—we may be biased, but we find the results of our handiwork just as decorative, pleasurable and a *perfect* creative outlet.



ELEVATOR BUCKETS
DUPLICATED EXACTLY

INGHAM FOR STRENGTH

JOHN INGHAM & SONS LIMITED
MIDDLESTOWN . WAKEFIELD

Telephone: Horbury 49/50

dm JI.91.

Gas Journal

106th YEAR OF PUBLICATION

EDITOR: CLIFFORD A. KING

Deputy Editor: Arthur C. Cross

Technical Editor: Norman S. Smith, B.Sc., Assoc.M.Inst.Gas E.

11, BOLT COURT, FLEET ST., Telephone: CENtral 2236-7

LONDON, E.C.4. Telegrams: Gasking, Fleet.

VOL. 278 NO. 4747 May 26, 1954

CONTENTS

Page

EDITORIAL COMMENT

Coal Production and Use ... 491
Health and Welfare ... 492
'King's Manual'—Section 6 ... 492
A Matter of Liaison ... 493
Training in Management ... 493

NEWS OF CURRENT EVENTS

Search for Natural Gas ... 493
Watson House Centre ... 493
Personal ... 494
Obituary ... 494
Diary ... 494
Wales and Monmouthshire Meeting at Porthcawl ... 494
Salesmen at Southport ... 495
Petroleum Congress, 1955 ... 498
Midland Juniors in France ... 499
Coal Preparation Plant ... 512
London and Southern's Outstanding Session ... 513
Eastern Section Meets at Skegness ... 514
South Western Section Meets at Taunton ... 518
Runners in Hot Water ... 518
Clayton Sports Association ... 518
British Gas Staff Association ... 521
London Juniors See Ciment Fondu Process ... 522
Beaver Committee in Scotland ... 522

TECHNICAL RECORD

Development in Lincolnshire Since 1949. By Bernard Clarke, M.B.E., J.P., Divisional General Manager, Lincolnshire, East Midlands Gas Board ... 501
Management Training Courses. By H. Buckley (continued from p. 436) ... 503
Development of Safety Measures. By D. W. Ault, Divisional Engineer, Lincolnshire, East Midlands Gas Board ... 506

Subscription Rates: Home and Empire 52/-; Foreign 60/-
Full Publishers' Notice: See Page 525.
Gas Journal . . . . Walter King Ltd.

Your Guarantee

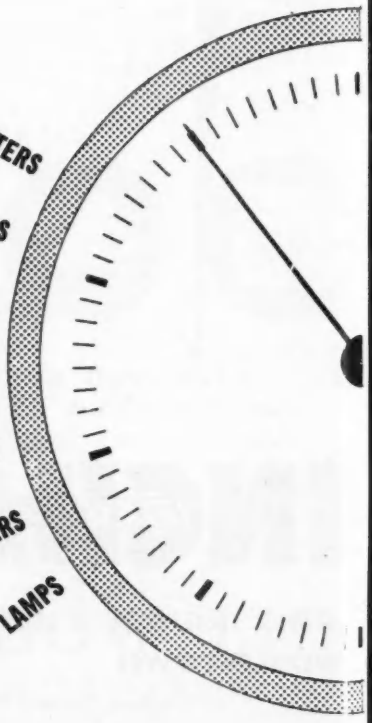
THOMAS GLOVER & CO. LIMITED

GOTHIC WORKS, ANGEL ROAD, EDMONTON, LONDON, N.18 and BRANCHES

TG2

PARKINSON AND COWAN GAS METERS

DOMESTIC METERS
INDUSTRIAL METERS
LABORATORY METERS
ROTARY METERS
REMOTE INDICATION & CONTROL EQUIPMENT
INFRA-RED DRIERS
STREET LAMPS



TERMINAL HOUSE, GROSVENOR GARDENS, LONDON, S.W.1

A1.2

Gas Journal

VOL. 278. No. 4747 106TH YEAR May 26, 1954

COAL PRODUCTION AND USE

Anxiety about the output of coal during this year was expressed by the Chairman of the National Coal Board, Sir Hubert Houldsworth, at a joint meeting between the Board and the full executive of the National Union of Mineworkers. The meeting was held on the day of publication—last Thursday—of the Board's annual report for the year ended December 31, 1953. No attempt was made by either side to apportion the blame for this year's disappointing results, but the Union representatives accepted the seriousness of the position and decided to call a special executive meeting for tomorrow to consider what can be done about it. A further meeting with the Board will be held later. When the wage settlement was reached in January, the two sides agreed to do their utmost to secure an increase in output during 1954 of 2½% (about 5 mill. tons), which they regarded as reasonable with existing manpower. In the first 19 weeks of the year production has actually been slightly lower than last year. With consumption more than 2 mill. tons greater, it is only natural that there should be anxiety about the prospects of building-up stocks to an adequate level by the autumn.

When we turn to the Board's annual report, we find that coal production in 1953 was about two days output less than in 1952, although there were seven fewer working days, for in 1953 the miners for the first time had two weeks paid annual holiday instead of one week, and the coal industry, with the rest of the community, had a holiday for the Coronation. The Board hoped that some of the output that would be lost due to the extra holidays would be regained by better attendance at other times in the year. In the first part of the year attendance was in fact lower than in most years since the war, but there was an improvement in the later part of the year. This improvement, as stressed in many of the national newspapers, was not enough to prevent 1953—as we have mentioned, the first year in which every miner was entitled to take two weeks paid holiday—from having a considerably worse record for absenteeism than almost any year since nationalisation. The *Manchester Guardian* says: 'There is not the slightest evidence that concession after concession given to the miners has produced a ton of extra coal. It can be argued, of course, that without regular wage increases, pensions, extra holidays, subsidised bus fares, free coal (in quantities enough to sell), and all the other benefits that nationalisation has given to coal miners, there would have been so many strikes that we should have had next to no coal at all. If so, it means that the whole framework of nationalisation is simply a convenient administrative form for the payment of blackmail.' This is bitter comment, but in truth the general production outlook is bleak. Stoppages in the coal industry last year accounted for nearly a fifth of the time lost nationally through disputes, and to date this year the record is worse. In brief, the coal crisis continues.

In 1953, coal output was 212.5 mill. tons, about 1.8 mill. tons less than in 1952. The slight surplus of £350,000 was made possible only by a 10% price rise in March, and this percentage increase was disproportionate. It had immediate effect in acting adversely on the gas industry's proper claims to process coal efficiently; and it immediately favoured the electricity industry. In other words, its influence was to favour the cost of production of electricity, thereby weighting in advance the competitive scales. The financial deficit carried forward from earlier years was reduced by only a small amount. The number of men working at the face was higher than in any year since the war; yet productivity at the face fell per manshift. It would appear that the National Coal Board's grounds for hope lie largely in reconstruction work. Last year, capital expenditure on reconstruction schemes was about as much as had been estimated in the 'Plan for Coal'. Already there has been huge expenditure since nationalisation, but Sir Hubert Houldsworth leads us to understand that the effects of present-day spending will take a decade to be felt. Another aspect of the invisible work as far as immediate output is concerned is the building-up of a force of skilled technical staff. Here again, 10 to 15 years is needed before a young man selected under a scholarship scheme can complete university education and gain enough practical experience to assume a position of responsibility. 'We've won through, I think,' said Sir Hubert, 'on juvenile recruitment; but there again, it will be five or six years before juveniles are pulling their weight.'

HEALTH AND WELFARE

We must, however, in all fairness have regard to the brighter side; and important achievements have been made. In 1953, in British mines fewer men were killed and fewer injured in the types of accident which must be reported immediately to H.M. Inspector of Mines than in any year for which there are records. There was no major disaster. All this is very encouraging from the humane aspect. Steady progress has in fact been made in building-up the service which cares for the health of the miner at work. By the end of 1953, no fewer than 57 doctors were employed full-time in this sphere; at the end of the year the number of colliery medical centres had risen to 201, of which 48 were completed during the year. In 1953, 4,048 men were certified as having pneumoconiosis, an increase over the 3,308 certified in 1952. There can be no doubt that the increase is attributable to the greater awareness of the disease and its symptoms; and it is natural to expect this trend to continue for some years.

We come for a moment to the chapter in the report dealing with the supply and use of coal. Reference is made to the facts that power stations, using 2.75% more coal during the year, sent out about 6% more current than in 1952 and saved at least a million tons of coal by increased generating efficiency. In the same period, though the story is not so spectacular, there was a continued improvement in the yield of gas from coal carbonised, which is estimated to have saved nearly 300,000 tons of coal. A large increase in mechanical coal cleaning capacity was achieved in 1953—a matter of 10½ mill. tons; and it is expected that, within three years, about three-fifths of deep-mined output will be mechanically cleaned. The amount of 'large coal' (over about 2 in.) supplied to gasworks and coke ovens, at 4.4 mill. tons, represented 8% of the total (54.6 mill. tons). The electricity industry, dealing with a tonnage of 37.4 mill. tons, used no 'large coal'. The industry can cope successfully with high-ash, non-coking coals, which fact, when all-round percentage increases in coal cost are put into operation, is, as we have mentioned, greatly in favour of electricity in the competitive fuel market. And, looking at the coal production situation as it stands today, to the anxieties about supplies next winter should there be added the fear that the cost of the pay increase may after all have to be met by yet another price increase? Finally we would call attention to the increased efforts being put forward by the N.C.B. to manufacture and market cokes which 'will burn better in open grates and not be too expensive'. Since vesting date, production of 'Phurnacite' has doubled. It is still relatively small—about 300,000 tons a year—but it has been decided to extend the plant to a capacity of 650,000 tons a year. The Board is also busy in building new coke oven plants which will increase supplies of coke to the domestic market.

'KING'S MANUAL'—SECTION 6.

Control and measurement are characteristic features of all modern chemical processes. Section 6 of *King's Manual of Gas Manufacture*, now available, covers the chief examples of these in the gas-making process—the retort house governor, the exhauster and its control, the station governor controlling the emission of gas from the works, and the station meter recording total production. In all these directions considerable development has taken place in the last 30 years or so.

The retort house governor, for instance, is an indispensable element in the gas-making process, particularly in continuous carbonisation, which is now carrying so large a proportion of the load. It is an important feature of the modern intermittent systems, horizontal or vertical, since the advantage is recognised of maintaining constant pressure conditions at the outlet of retorts. 'Pulling' is universally condemned. But a vital feature of continuous systems is the maintenance of a slight pressure in the top of the retort to keep the gasways cool and clear. And the allowable variation is small; this pressure should not be more than one-tenth inch water-gauge or less than one-twentieth inch. So small is the permissible variation that retort house governing is not enough in itself. In reference to one of the designs of retort house governor described we find the statement: 'There is usually no difficulty in maintaining retort house pressures constant within less than 0.01 inch water-gauge, but if a pressure oscillation of a periodic type—due, for example, to exhauster "beat"—is present, no regulator can eliminate it, but will follow it slightly out of phase.' In other words, the exhauster must also be effectually governed.

Retort house governors are divided into the two main types, direct-acting and relay. All the well-known designs are described and the descriptions are illustrated by effective diagrammatic drawings. In the first type, great care is taken to reduce inertia and friction to a minimum. And the new alloys are freely employed to eliminate corrosion. Great ingenuity is most variously exhibited in the relay types in which the control element is small—*i.e.*, low in inertia—transmitting a working fluid to a power element with plenty of margin for the manipulation of the valve in the gas stream. Water pressure, gas pressure, and electric power are variously used in these designs, of which Continental as well as British examples are described. Relief valves, to release gas from the main in case of accidental stoppage of normal flow, are not dissimilar in principle. Details are given of two standard types.

The chapter on exhausters includes their governing. It begins with the rotary bladed types, culminating in the modern four-bladed machine, but soon moves to the twin impeller of the two main types. It is interesting to note that the twin impeller was built as early as 1847, became popular in the United States of America, but did not come back to this country again until about 1930. The Holmes-Connersville and the Waller-Roots machines are fully described and illustrated. But in many gasworks the output has increased beyond the reasonable capacity of the positive type exhauster, and therefore more and more machines of the turbo-type are being installed, with several advantages, including smooth flow without pulsation and ability to separate most of the tar from the gas—but not without some increase of temperature. The turbo-exhauster is driven by electric motor or by steam turbine. Here again governing may be either direct or relay. The latter becomes necessary in the larger capacities when the power required to operate controls may be too much for direct action. The four main relay systems are set out and discussed.

The station governor has perhaps changed its charac-

ter more during the last 30 years than any other of the regulating and controlling apparatus of the gas-works. Then it was almost entirely a question of reducing holder pressures to those required on the district. Now the pressures required are often much higher than the holder can produce, boosters raising the gas to the high pressures necessary for transmission over expanding districts. The governors are either of the bell or the diaphragm types and several designs are described in a short chapter.

Section 6 ends with a chapter on the station meter, dating from the 'gasometer' of Samuel Clegg. Here the wet drum—the ingenious 'B.M.' is water-sealed—is giving way to the twin impeller working in reverse as the gas flow causes the elements to revolve in their frictionless bearings. This chapter is confined to the orthodox station meter, the straight measuring of total gas production. Other types of flow-meter are described in Section 10. And it will be gathered from the final paragraph of the section under review that there are other problems to be dealt with by volume-measuring apparatus, such as the mixing of coal gas and water gas. Some of this apparatus is controlled by the calorific value of the mixture, and more will be heard of variations in this direction as, for instance, oil refinery tail gases come to be more freely used in town gas supply. Possibly, too, some forms of shunt meter will be more commonly applied. It is to be hoped that *King's Manual* will be constantly revised so that these, and all other technical developments, may be brought within its covers as they become standard practice.

A MATTER OF LIAISON

Just over 12 months ago there was established the Technical Section of the Commercial Manager's Department, E.M.G.B. The work and aims and achievements to date of this new Section, buildings to house the activities of which are now being erected at Syston, and which will eventually be officially opened and designated 'Appliance Research Centre' of the Board, were described in a paper, 'Technical Liaison with the District,' given by Mr. J. E. Cooper, Technical Assistant to the Commercial Manager, at the recent E.M.G.B. staff conference at Skegness. Starting-point of the Centre, it seems, is the study of district performance on equipment of all types based on 'defects reports.' Four of these reports are at hand as we write. The first copy goes to the manufacturer, the second to the Commercial Manager, the third to the Divisional General Manager. The fourth copy is for 'office use.' 'At the time of writing this paper,' states the author, 'some 2,500 reports have been received, averaging 210 per month.' It is explained that testing of new models of appliances is carried out in the first instance by Watson House, to which admirable organisation E.M.G.B. rightly subscribes in practical form. Following the preliminary tests, the Board takes control to find out what gap exists between the Watson House laboratory bench results and the trials in the broad fields of Lincolnshire. Mr. D. W. Ault, during the discussion on the paper, asked exactly what the new East Midlands Appliance Research Centre could accomplish which Watson House could not, in fact, embrace in its programme. To which pertinent observation Mr. Cooper was at pains to point out that the E.M.G.B. had no desire to 'fall out' with Watson House. What was wanted was information that what was approved by Watson House would work satisfactorily with an E.M. Wobbe Index. We ourselves, after studying Mr. Cooper's paper, hope that Roger Bannister's recent magnificent record will not lead to a spiral staircase in the distribution and filling-in of E.M.G.B. defect reports.

TRAINING IN MANAGEMENT

We have heard a good deal of late of the development of courses in training in management, which, of course, has the full active backing of the gas industry as a whole. The subject was reviewed by Mr. H. Buckley in a paper to the Wales and Monmouthshire Section of the Institution of Gas Engineers (last week's 'JOURNAL' and today's issue), the author at the same time studying the ground covered by part-time evening study or day release classes, post-graduate university courses and various residential courses. The advantages and disadvantages of the various types of courses are considered; and from what we have heard about residential courses from other sources we agree with the author's conclusion that they have particular advantage in that they take a mature trainee of a predetermined age group and set him in conditions calculated to develop those qualities which go to make up personality and the ability to lead men while teaching him the techniques. Comparisons are made with American practice, and particular reference is made to the first I.G.E. Residential Course in Management Studies held at Brooklands Technical College, Weybridge, in 1953. Mr. Buckley concluded his paper with his own observations on the purpose of management training. It will be agreed that courses in themselves do not give a complete training. Indeed, their purpose is to supplement practical experience and to provide the background. The number of residential courses is increasing; and this is all to the good. Great value can be derived from these courses providing the syllabus is arranged to suit the standard required by the person attending.

SEARCH FOR NATURAL GAS

Deep drilling for natural gas in Sussex, as part of the Gas Council's five-year exploration plan, is due to start shortly. The work is being carried out on behalf of the Council by the D'Arcy Exploration Company, a subsidiary of the Anglo-Iranian Oil Company. Site clearance has started near Crowborough Warren, Crowborough, in the vicinity of Ashdown Forest. It is expected that the well will be drilled to a depth of about 2,000 ft. The work will probably take between three and four months, although this may vary according to the conditions encountered.

Boring operations at Cousland, near Dalkeith, Midlothian, have been called off. The Scottish Gas Board states that the exploration has not provided 'very satisfactory results.' Engineers carried out borings to a depth of over 2,000 ft. They had confirmed the presence of natural gas, but the stratum was not as porous as was thought from earlier investigation, nor did the natural gas exist in the expected great quantity. They also hoped they might strike petroleum, which had been explored during the war years. Evidence has shown it is in the area, but it is not known how far down. The technicians have moved away, but they may return to Scotland in a few months, because they are sure there is a reservoir of gas which can be tapped if the bore goes down in the right place. The report of the experts is to be made to the Gas Council.

WATSON HOUSE CENTRE

The Gas Council, by agreement with the North Thames Gas Board, is assuming responsibility for the Watson House Centre. The Centre will be administered on behalf of the Council by the Board. Mr. L. W. Andrew, B.A., B.SC., A.R.I.C., who has been Senior Technical Officer at the Centre, has been appointed its Director with effect from May 1. Watson House deals with the design and performance of appliances for the combustion of gas and coke in domestic, commercial, industrial, and public buildings. An important function of the Centre is the testing and approval of appliances.

Hitherto the North Thames Gas Board has made the Watson House technical advisory services available to all area boards, and the new arrangements will ensure continuity in the national character of the work of the Centre.

EASTERN JUNIOR GAS ASSOCIATION.—A glaring error occurred in our report on p. 427 last week. For 1928 and 1929, read 1946 and 1947.

Personal

MR. JOHN WILSON, Manager at Shotts, Lanarkshire, for nine years, has been appointed District Manager at Nairn. He has held previous appointments at Girvan, Neilson, and Stewarton.

DR. E. J. GAMMON, L.R.C.P., M.R.C.S., Senior Medical Officer, R.A.M.C., Aldershot, has been appointed Assistant Medical Officer to the West Midlands Gas Board, and will be stationed at the Board's headquarters. Other appointments announced by the Board are those of MR. A. J. REEVE, Technical Assistant, Hinckley, to the position of Production Engineer at Hinckley, and MR. G. F. COLE, Works Superintendent at Loughborough (East Midlands), as Works Superintendent at Wellington.

MR. ANDREW MITCHELL, of Dunfermline, has been appointed Divisional Distribution Engineer for Lanarkshire. He went to Lanarkshire in 1946 as distribution engineer of the former county gas undertaking. Previously he held managerial posts at Haddington, Buckie, and Penicuik. He received his early training at Dunfermline Corporation gasworks and studied gas engineering at the Heriot-Watt College, Edinburgh. Mr. Mitchell holds the Institution of Gas Engineers' Diploma in Gas Manufacture and is a Corporate Member of the Institution.

MR. KEITH FRENCH, M.SC., F.R.I.C., has been appointed by the National Benzole Co., Ltd., as Assistant Chief Chemist (Research) at its Watford Laboratories. Educated at Christ's College, Finchley, he joined the Company as junior research assistant in the laboratories, then situated at Willesden, in 1938. In 1944 he became an A.R.I.C., and, later that year, gained his degree as B.SC. In 1947 he was promoted to assistant research chemist; in 1949 he became M.SC.; senior research chemist in 1950 and, in the following year, he was elected F.R.I.C.

Obituary

DR. C. M. WALTER, who retired in 1947 from the position of Engineer-in-Charge of the Industrial Research Laboratories of the Birmingham Gas Department, died at St. Paul's Hospital, London, on May 19. After taking a Mechanical Engineering course at the University of Birmingham and subsequently gaining his B.SC.(ENG.), he entered the Gas Department in 1909; and after preliminary work in the design and construction of town gas-fired industrial furnaces and apparatus, he was appointed assistant to Mr. E. W. Smith (now Sir Ernest Smith) on the development of the use of high pressure gas for industrial purposes. In 1916, during the first world war, the Industrial Research Laboratories were formed with Mr. Walter as Engineer-in-Charge, and the work of those laboratories greatly extended the former high pressure laboratory by having sub-sections under various experts dealing with subjects such as heat treatment on a commercial basis, physical and mechanical testing, chemical and metallurgical investigations. Following upon these new developments, Mr. Walter was awarded the Degree of Doctor of Science (Engineering) of the Birmingham University. Subsequently, the Laboratories were further extended and early in 1939 were transferred to Brasshouse Passage.

Diary

May 27.—NORTH THAMES G.C.C.: Caxton Hall, Westminster. 2.30 p.m.

May 28.—SCOTTISH JUNIORS (WESTERN): Visit to the Power-Gas Corporation, Ltd., Stockton-on-Tees.

May 28.—LONDON JUNIORS: Annual General Meeting. 178, Edgware Road. 6.30 p.m.

May 31.—GAS OFFICERS GUILD: Annual General Meeting, St. Andrews Church Hall, Exeter Road, Bournemouth, 5 p.m.

May 31-June 2.—INSTITUTION OF GAS ENGINEERS: 91st Annual General Meeting, Bournemouth.

June 1.—SOUTH EASTERN G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

June 2.—SOUTHERN G.C.C.: Grand Hotel, Fir Vale Road, Bournemouth, 11 a.m.

June 3.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

June 3.—MIDLAND JUNIORS: Ladies' Day.

June 5.—SCOTTISH JUNIORS (EASTERN): Annual Outing, Leven.

June 12.—MANCHESTER JUNIORS: Visit to Burnley Gasworks. 'The Design and Performance of 0.5 mill. cu.ft./day Tully Carburetted Complete Gasification Plant,' G. R. Spence, G. Wheatman and I. J. Harthill.

June 15. — LONDON AND SOUTHERN SECTION, I.G.E.: Summer Meeting.

June 18.—SCOTTISH JUNIORS (WESTERN): Golf Outing.

June 19.—LONDON JUNIORS: Ladies' Day at Hastings.

June 22-25.—ROYAL HIGHLAND AGRICULTURAL SHOW: Dumfries. Gas Council exhibit.

Woodall-Duckham, Ltd.—The information given under 'Company News' last week under the heading 'Woodall-Duckham' is somewhat misleading as it should be related to the activities of Woodall-Duckham, Ltd., of which Woodall-Duckham Construction Co., Ltd., is only one operating subsidiary. The group profits were earned by three operating subsidiaries in Great Britain and one in Australia. The scrip issue proposed will be made by Woodall-Duckham, Ltd., and not as stated, by Woodall-Duckham Construction Co., Ltd.

WALES AND MONMOUTHSHIRE MEETING AT PORTHCAWL

Some of the gas bowlers as well as all the golfers assembled at the Royal Porthcawl Golf Club on the occasion of the spring meeting of the Wales and Monmouthshire Section of the Institution of Gas Engineers. In the centre of the front row is Mr. Clark Jackson, who won the Upjohn Cup with a net score of 74.

SALESMEN AT SOUTHPORT

Successful Two-Day Conference

For two years the Gas Sales and Service Conference had been held at the Seymour Hall, London. The time had come for a change of venue, and the Gas Council's acceptance of the North Western Gas Board's invitation to hold the 1954 conference at Southport was a wise move. Few of the delegates could have regretted the decision, and the Gas Council itself paid generous tribute to the degree of assistance and co-operation received from their North Western hosts. Held on May 19 and 20, the conference was a very considerable success and provided that type of inspiration and incentive which is so essential in moulding and maintaining a live and effective sales force.

As a meeting place the Floral Hall proved to be superior to the Seymour Hall in several respects, and the accompanying exhibition of gas appliances was housed more satisfactorily than many had anticipated in an adjacent marquee. A break with past tradition was the invitation of the public to this exhibition on days immediately preceding and following the conference. The very adequate publicity given to this public viewing and the impressive assembly of North Western Gas Board mobile showrooms and vehicles helped to give the event a certain importance in the town and provided the appliance manufacturers who were showing their products at the exhibition with a wider shop window.

The conference opened with some words of welcome and encouragement from the Earl of Derby, M.C., Lord Lieutenant of Lancaster. After being introduced by Colonel Sir Harold Smith, Chairman of the Gas Council, he said that this, the first occasion on which the conference had been held outside London, was a choice which surprised nobody. He felt that the Southport air would make the delegates wish they had come to this wise choice a long time ago.

He confessed that at first the words 'sales and service' appeared to be slightly obscure, but he now fully realised why those names had been chosen. 'On the one hand you have to keep costs and prices at competitive levels and on the other hand you are also members of a great public utility entrusted each year with 27 mill. tons of the nation's coal and charged with the duties of satisfying all reasonable demands for gas. It is certainly a heavy responsibility.'

Lord Derby said it was easy to turn on the gas but to ensure that the gas is at the proper pressure at all times of the day and night was, he was sure, a most difficult and complicated task.

The weather, too, he realised, made their job an even more difficult one as climatic conditions had a strong bearing on the amount of gas used.

Perhaps it was only natural, he added, that today the emphasis was on selling rather more than on service. 'As we all know, it is a fact that in the immediate post-war years there was too much money chasing too few goods with the result that practically anybody could choose anything they wished and competition from overseas at that time did not affect us at all. We are already finding Germany and Japan are becoming dangerous competitors in this field.' The Chancellor of the Exchequer had made that all too clear in his last budget, in which he attempted to improve the plant and machinery position and asked us to be content without tax concessions to which we were all looking forward, added Lord Derby.

When a product was used exclusively for the home market and most of the major industries were depending on its use and if it could be provided at low cost and high efficiency then clearly it could play its part in keeping down the costs of exports. Again it could help the home consumer to keep his costs down and so improve his standard of living.

Concluding, Lord Derby said that he hoped the conference would be a great success. He then declared the conference open.

Proposing a vote of thanks to Lord Derby, Mr. D. P. Welman thought there was great merit in moving such conferences as this from board area to board area. Not only was the business done as efficiently, but there was also the opportunity to see how the other man works and to get to know him better on his own ground.

Mr. Welman thanked Lord Derby and said: 'Your presence here and your words will have given considerable inspiration at the start of this conference. I feel that it will be our fault indeed if we do not carry it forward in the same spirit throughout the rest of our business sessions.

Introducing the Mayor of Southport, Alderman William Tattersall, Sir Harold Smith said that in holding the conference in Southport, he realised it was only through the kind offices of the Corporation of Southport.

Alderman Tattersall, an impressive man well over six feet in height, emphasised that the sales of gas consuming equipment either to the industrial or to the domestic consumer in this area had to be against a natural reluctance to buy fanciful equipment or anything less than the best. 'Therefore you delegates have not only got to have the usual persuasive sales talk, but you have to have quite a comprehensive knowledge.

'I know some of the delegates and I know that they face these things. The gas industry seems to accept, more or less gracefully, their inability to compete in the street lighting field, chiefly, I think, to the cost of the service.

The Rt. Hon. the Earl of Derby, Lord Lieutenant of Lancaster, formally opened the conference. He is shown here with Alderman W. Tattersall, Mayor of Southport, and Colonel Sir Harold Smith, Chairman of the Gas Council.

But the industry must, in my view, improve on the thermal yield from coal if it is to have any future. I think you are men and women with an important mission. It seems a trifle odd that today we legislate for the welfare state and yet seem to pay little regard to the main natural wealth we have.'

The citizens of Southport were glad to welcome the delegates, concluded Alderman Tattersall, because such conferences conferred a benefit to the community and if their appliances and their commodity were brought to the best possible pitch of efficiency they would confer benefit and comfort to all sections of the community.

Mr. H. F. H. Jones, Deputy Chairman of the Gas Council, proposed a vote of thanks to Alderman Tattersall. He said that although it was agreed that coal must be processed in the most efficient way, the gas industry was

doing better every day. 'We must process coal more efficiently than in any other industry.'

Before vacating the chair in favour of the first sessional chairman, Sir Harold Smith referred to the death of Mr. Elson, 'the officer largely responsible for organising this conference.' He also referred, with regret, to the death of Mr. G. C. Holliday, the joint author of one of the papers.

Mr. D. P. Welman took the chair for the first business session, devoted to 'Gas Appliances—Development, Production, Salesmanship.' The first speaker was Mr. W. D. King, Deputy Chairman of Radiation Ltd., who dealt with the relationship between diversity of need and the necessity for keeping the production position reasonably simple. The functional ideal, he said, must be sacrificed to a measure of standardisation under practical conditions. Another important point was that the highest efficiency can be obtained only in relation to one specific set of conditions of operation, and the greater the flexibility demanded by an appliance, the greater the necessary departure from optimum attainment. Mr. King was outspoken in his comments on superficial features and gadgetry. 'It is profoundly to be hoped,' he said, 'that in this country we avoid the type of salesmanship which almost inevitably calls superficial features into being. Every effort should be made to progress along the lines of genuine functional advantage, and by making use of all the techniques which are now at hand, there is no reason why this progress should not continue indefinitely.

Tribute to Mr. G. C. Holliday

From 'Design and Development of Modern Gas Appliances' the conference turned its attention to another aspect of the subject, 'Technical and Laboratory Service to the District,' a joint paper by G. H. Fuidge, Chief Physicist to the South Eastern Gas Board, and the late G. C. Holliday, Manager of Watson House. In a moving tribute to Mr. Holliday, Mr. Fuidge spoke of his characteristic thoroughness and attention to detail and his valuable work in bringing the potentialities of gas before the bodies concerned with post-war housing and heat services.

The paper described the gas industry's various technical resources, research facilities and testing procedures. The paper touched on standards of approval and Codes of Practice, and then showed how the technical information gleaned in the industry's laboratories was disseminated to sales, service and fitting staffs. It ended with two questions, directed to these staffs, enquiring whether they were getting the technical information they wanted in the form they wanted it, and whether they were keeping their technical men informed of their problems and experience.

Mr. Archer Entwisle, Group Sales and Service Officer for the Mid-Cheshire Group of the North Western Gas Board, followed with a description of 'The Sales Front.' He too had questions to ask: 'Where are we going? What are we doing?' And he tried to supply the answers. There were also the questions asked by the public concerning nationalisation and similar controversial matters, and Mr. Entwisle stressed the importance of seeing that staffs gave the right answer.

Finally, Mrs. Hilda Whitlow, Cookery and Household Editor of *Homes and Gardens*, commented on 'Salesmanship and the Housewife.' Her paper was nothing if not outspoken and therein lay its value. She criticised descriptive literature containing technical information unintelligible to the majority of housewives, and other literature giving so little information as to be useless to anybody. She believed that laboratory and practical tests of new appliances gave no real indication of how they would appear under the stresses and strains of hectic family life, and she wondered whether it would be possible to have an appliance which had passed factory and laboratory tests tried out in private homes by housewives before it was put into large-scale production. Much of her paper was devoted to cooker design about which her ideas were particularly interesting. She demanded that all removable parts of a cooker should be of a size to fit easily into a household sink; that if automatic lighting to all burners was impossible 'let us keep the flint or battery lighter'; that oven roofs should be removable; that warming drawers and cabinets should be developed. In addition, she had some hard words for the gas geyser, thought that the gas-heated drying cabinet was under-publicised, and had some interesting comments to make on various other appliances.

The discussion which followed was much concerned with the housewife and her habits. Mrs. Joan Robins (North Thames) thought that the housewife's views were only imperfectly understood but suggested that her opinion could be gained through proper use of home service staffs. Which prompted Dame Vera Laughton Mathews to champion the Women's Gas Federation and announce the distribution of a detailed questionnaire to a hundred of its branches.

Mr. J. H. Scott (Wales) favoured the conference with his annual batch of wisecracks and Mr. J. D. C. Woodall (South Eastern) 'ratted' on his former engineering colleagues by making a plea for reduced sulphur.

At the close of this session the meeting adjourned for the official inspection of the exhibition.

When business was resumed after lunch the session bore the title 'Organising a Sales Campaign' and consisted of three papers. It was at this point that the conference which had hitherto maintained what might be termed a 'comfortable' degree of interest, suddenly became electrified by the contribution of the first speaker, Mr. F. H. Bunn, Director and General Sales Manager of Hoover, Ltd., asking 'Why Bother About Sales?' An advocate of the divorce of salesmanship and technical knowledge, Mr. Bunn maintained that a salesman—even a gas salesman—could be trained in a matter of weeks. It was the task of such a salesman to sell the idea and the benefits of gas; it was the job of the technician to follow the salesman.

Winner of the Gas Council Challenge Trophy this year was Mr. H. W. Merrison, Service Manager of the Tottenham Division, Eastern Gas Board. His paper 'Words and their Work,' was considered the best paper presented to a Salesmen's Circle during 1953. He is shown here receiving his prize from Sir Harold Smith.

Miss Mary Strong, Western Group Sales Manager, Northern Gas Board, followed with 'Marching Orders', which contained some interesting references to the success of the low-priced 'Northern' sink heater and the 'Hire a Fire' service, together with a plea for efficient records and market research. Mr. S. L. Pleasance, Director of Ascot Gas Water Heaters, and spokesman of the S.B.G.I., rounded off this trio of viewpoints with 'Partnership Unlimited', a paper which emphasised the fact that the gas salesman sold appliances, not gas. 'Can you only sell if you have the cheapest possible appliance on the market? What an admission!' With these words Mr. Pleasance introduced a short homily on the fact that the

gas salesman was also selling quality, while of teamwork he said: 'We don't regard you as customers, but as members of our sales force and we of yours.'

Discussion time found plenty of people anxious to take on Mr. Bunn, although the pro-Bunns also had their word. The time-honoured—perhaps time-worn is a better description—phrase about the gas salesman selling a *service* received another airing, and many were the critics of the few weeks' training theory. If Mr. Bunn's reply was not classic it was at least memorable. Rising to his feet with a sort of restrained violence he said: 'Some of you blokes have been pretty rude to me, but I can tell you this—that although I have addressed salesmen's conferences all over the world, not least of them being in America, I have never in my life heard so much drivel and b—— nonsense . . .' The rest of the sentence was drowned in applause. Once, he continued, he had personally sold a Hoover cleaner to a gas salesman. In order to clean the carpet in the gas showroom they had to take the lead from the tobacconist's next door. That, said Mr. Bunn grimly, was in 1923 and the manager got the sack.

It is no exaggeration to say that this and the remainder of Mr. Bunn's remarks which, although amusing, were seriously meant and constructive in their intention, provided the conference with a topic of conversation which was still in full employment when delegates dispersed the following day.

When the afternoon session, which had been under the Chairmanship of Mr. A. R. McBain, Chairman of the Southern Gas Board, came to a close, the Floral Hall became transformed into a ballroom where until the permitted hours were exhausted—although not the dancers who circled the excellent floor—the Civic Reception and Dance was held.

The Salesman's Viewpoint

'The Salesman's Viewpoint' was the title of the third business session which took place on the following morning, Sir Andrew Clow, Chairman of the Scottish Gas Board, occupying the chair. Less exciting than it should have been, this consisted of a paper by Mr. S. A. King, Commercial Manager of the Eastern Gas Board, followed by the opinions of a forum consisting of six representatives. The paper 'Taking Stock' was both thoughtful and provocative. Typical of the latter quality was the statement: 'If I had to face the next five years without the prospect of one inch of promotional Press publicity, I would do so confidently provided I were assured of an adequate number of the right kind of shops, situated in the right places and supported with the right number and right type of indoor and outdoor salesmen.' From his experience, said Mr. King, there was nothing very profound or clever in selling gas to industry, but he advocated the exclusive use of specialist industrial salesmen for this type of business. He believed in commission and pointed out that salesmen should not mistake technical knowledge for salesmanship.

The six sales representatives who completed the forum then presented their short statements. Mr. W. J. Barber, Fittings and Sales Superintendent of the Stroud Unit, South Western Gas Board, started the ball rolling and he was followed by Mr. H. Johnson, Showroom Supervisor, Harrogate District, North Eastern Gas Board, Mr. W. Marshall, Assistant Manager, Hawick, Scottish Gas Board, Mr. T. E. Tyrell, Sales and Service Superintendent, Cardiff Undertaking, Wales Gas Board, Mr. S. C. Watson, Sales Manager, Newcastle Division, Northern Gas Board, and Mr. W. E. Whiten, Sales and Service Manager, Nottingham, East Midlands Gas Board. Few very original opinions emerged although mention might be made of Mr. Tyrell's excellent championing of the 30 cwt. van as opposed to the clumsy mobile showroom for selling in certain areas and Mr. Watson's well-contrived case for good display. Nor was the discussion which followed particularly constructive, although Mr. T. H. Thornton's suggestion that future sales conferences might be heralded by a certain dance band whose sessions commence with the words 'Wakey, Wakey!' is perhaps worthy of note. Mr. A. V. Horsfall, Sales and Service Manager of the West Midlands Gas Board, who proposed the vote of thanks to the speakers appeared surprised that Mr. King, having failed to make any reference to demonstration theatres in his comments on showrooms, was not subjected to a storm of protest from those who recognised the value of such things.

There followed the pleasant ceremony of the handing over of the Gas Council Challenge Trophy to this year's winner, Mr. H. W. Merrison, whose paper 'Words and their Work', presented to the Tottenham Divisional Circle of the Eastern Gas Board, was considered to be the best paper of the year by a panel of judges. Mr. Merrison's comfortable personality was in no way daunted by the vastness of the hall, and the audience was quick to note the amusing slip of the tongue (in view of the title of his paper) which made him refer to Sir Harold Smith as his **late** chief, despite a rapid substitution of the word 'former.'

The Conference in Retrospect

By this time the end of the conference was in sight and Mr. C. H. Chester, Chairman of the South Western Gas Board rose to speak on 'The Conference in Retrospect.' Speaking extempore and with the dignified depth of voice for which he is well known, Mr. Chester said that gas industry salesmen had to cease being just order takers or order refusers. 'Whatever the way of achieving a sale is let us do it.'

Increasing sales was the best way of meeting increasing costs and avoiding unnecessary economies. 'All savings obviously should be made if they are wasteful but we sometimes talk of savings in order to balance a budget instead of increasing sales.

'Since the last conference which you will recall was mainly devoted to water heating, which is I suggest our biggest load build up, a great change has taken place on this side of the industry, due I think, almost entirely to the exemption of water heaters from hire purchase restrictions, and to the reduction in the purchase tax. I repeat, almost entirely, since some of the boards have already started a revival by resorting to hire terms.' It was not many decades ago since the industry thought up and seriously developed the slot meter. When first adopted, a target of 50,000 water heaters was aimed at in one area alone—and it was achieved. That just gave a measure of the potential their sales force had and that was but one phase of the gas industry.

Speaking of the heating load, Mr. Chester said he had heard well known and respected people say that the gas fire business must not be pursued. But the industry needed the load that came from the gas fire. Also there had to be a proper realisation of the fact that in order to sell anything at all in a public utility every whim of the consumer had to be met. 'We have to accept the responsibility of a public utility to give just the service the consumer requires.'

The relation between gas price and coal price on the general wholesale index, continued Mr. Chester, was now just about as favourable to gas as it was in 1938. None of us could relish the increase in gas prices but in relation to the wholesale price index and taking into account the increase in coal prices and wages, gas prices today were in at least an equal position to those of 1938: 'Why? Why shouldn't we throw our chests out and say: "This is because the gas industry is really efficient?"'

He found the views of Mrs. Hilda Whitlow and the subsequent discussion refreshing and wondered whether any of the ladies present had asked their husbands what they thought of the paper. No doubt the manufacturers had their viewpoint and would have the remedy of some of the problems put to the conference.

In his paper that morning, Mr. King had stressed the importance of separating production from salesmanship. 'I would go further and say it is salesmanship which should be separated from everything except the final result,' asserted Mr. Chester.

Every industry, he continued, had its own problems and it was to our mutual advantage to hear the various points of view and to discuss the suggestions and opinions which had been so fully expressed in these two days. 'Whatever our status in the industry is,' concluded Mr. Chester, 'we can all act as good public relations officers for the industry

in varying degrees. Every opportunity can be taken to make sure that the public is made aware that we have a first class set of appliances we want them to buy. It is unfortunate that this industry is largely controlled by the coal price structure, but as I said before, the industry is taking all steps to combat this.'

Proposing a vote of thanks to the Chairman of the Gas Council, and to his colleagues, for permission to hold the conference, Mr. H. R. Hart, Commercial Manager, East Midlands Gas Board, said the conference had taken upon itself its own character—' to me this character is that it is a happy conference.'

It was happy in its conception and in its execution, and particularly in its environment. For that they had to thank Mr. D. P. Welman, Chairman of the North Western Gas Board, and the Board's members for their thoughtfulness in inviting them to bring the conference from London to ' this invigorating and delightful part of England.

' In so doing,' went on Mr. Hart, ' the burden of the day has fallen very heavily upon Mr. R. J. Gregg. Organising a conference at this distance is a considerable task, but with his usual efficiency he has carried it off extremely well and I know that as usual his organisation has been well-nigh perfect. This must have been an enormous task in view of the sad loss of Mr. W. D. Elson, his lieutenant.'

Dealing with public relations, one of the concerns of the conference, Mr. Hart said no big industry had the moral right to allow itself to be misunderstood or misinterpreted by its public. ' In true British fashion we have sometimes been so reserved that nationally we have allowed ourselves to be misunderstood. I do hope that the Press who have attended this conference will have noted the character of it and also how proud we are of our achievement and how self-critical we are prepared to be. That has always been typical of the gas industry.'

' A Lot of Frightened Ninnies? '

Closing the conference, Colonel Sir Harold Smith thanked Mr. Hart on behalf of the Gas Council and said that in listening to the free and enthusiastic discussion, they had been rewarded for anything they may have done towards laying on the conference. Speaking of free discussion, he added, he could not help thinking of the references in the Press during the last two or three years from which one would almost imagine that since the gas industry's nationalisation it had been peopled by ' a lot of frightened ninnies who couldn't say boo to a goose. I hope that those members of the Press who have been here yesterday and today will come away with an entirely different idea. Everyone has said exactly what he liked.'

So ended the main conference, but for one comparatively small but extremely important section of the industry things were just beginning. Less than two hours later the Home Service Session got under way with Mrs. Eileen Murphy, Home Service Officer of the Gas Council, in the Chair. Opening the session, Sir Harold Smith said that the majority of gas boards had proved that home service paid and now regarded it as an essential and specialised aspect of their public relations work. By means of demonstrations, advice in the home, creating an accurately informed public opinion, and obtaining consumer records, home service advisers were making a valuable contribution. And Sir Harold said that he regarded the fact that some 180 home service advisers were present in the hall as proof that the boards were fully alive to the importance of the woman customer's viewpoint.

During the session two papers were presented. The first, by Mr. Stirling Everard, Manager of the Market Survey Section, North Thames Gas Board, and entitled ' New Homes, New Problems,' showed how information gained by market research could be utilised in shaping commercial policy. ' Market research,' said Mr. Everard, ' is only getting to know people,' and he pointed out that all official statistics only gave information about whether consumption was rising or falling—they did explain why. That was where market research came in, for by an understanding of consumer behaviour it was possible to foresee certain future trends. Mr. Everard explained how after the war the former pattern was not resumed and low consumption went up and high consumption went down, this reflecting the change in income and habits. And he touched upon the oft-discussed question of whether or not the house with the television aerial was likely to provide a good sale for a gas appliance. They had found, said Mr. Everard, that those houses which had television also tended to have better cookers. He emphasised the fact that when people obtained some proper water heating system gas consumption for the cooker often seriously dropped due to the considerable use which had been made of buckets and similar containers on the stove for water heating purposes. It was in the interests of the gas industry to develop a cheap form of water heating for old housing; they already had the appliances for new housing.

The other paper at this session was by Mr. John Devlin, Principal Bakery Officer, British Baking Industries Research Association, the subject being ' The Importance of Mixing Operations in Baking.'

Later the gas industry's charm school reassembled at the Prince of Wales Hotel for dinner, where the ladies were welcomed by Mr. H. F. H. Jones, Deputy Chairman of the Gas Council.

The Most Efficient Appliances

It was most interesting, he said, to know that the amount of gas sold to domestic consumers had increased only slowly in the past few years and quite recently had shown a tendency to diminish. This, in spite of the fact that more consumers were now connected to the mains than ever before. Each year between 150 and 200,000 extra consumers had been added, and the present rate of increase was much larger than this. At the same time sales of appliances had expanded greatly, and although many of the cookers sold replaced older models, many were also fitted in new houses and many of the water heaters, wash boilers and refrigerators represented completely new business. The fact that the industry could accept all these new consumers and all these new appliances, whilst selling to domestic consumers as a whole no more gas than in previous years, surely substantiated all claims that the industry made the best use of the coal which it received and that it provided the consumer with the most efficient appliances ever put on the market. Nevertheless, this decline in sales per consumer made it difficult for boards to earn sufficient revenue whilst keeping down the price of gas, and the most satisfactory way of reducing costs would be to increase sales of gas to each individual consumer. In this way, he said, home service advisers could make an important contribution towards the industry's future, and they comprised one of the most important groups of people working in the gas industry.

So another Sales and Service Conference ended. That it was successful few who attended it are likely to deny. It was in fact a complete vindication of the policy of holding the conference in the areas of various boards.

PETROLEUM CONGRESS, 1955

The purpose of the Fourth World Petroleum Congress, which is to be held in Rome from June 6-15, 1955, is to take stock of the present status of petroleum science and technology and to facilitate the exchange of ideas and experience among men who, in the different parts of the world, are daily faced with similar problems. The plenary sessions and the meetings of sections will be held in the Congress Building of the Rome Universal Exhibition Centre.

A National Committee has been formed so far in the following countries: Australia, Austria, Belgium, Brazil, Canada, Denmark, France, Germany, Great Britain, Greece, India, Luxembourg, Mexico, Netherlands, Spain, Sweden, Switzerland, Trinidad, United States, Uruguay, and Venezuela.

The National Committees will be responsible for inviting scientists and experts in their country, and for receiving from them the papers to be presented at the various sections of the Congress. Such papers will be forwarded to the General Organising Committee through the National Committees, and must be written in either of the official languages of the Congress (English and French), enclosing a brief summary in at least one of the two languages.

Thirty-four countries have so far accepted the invitation to participate in the Congress.

Midland Juniors in France

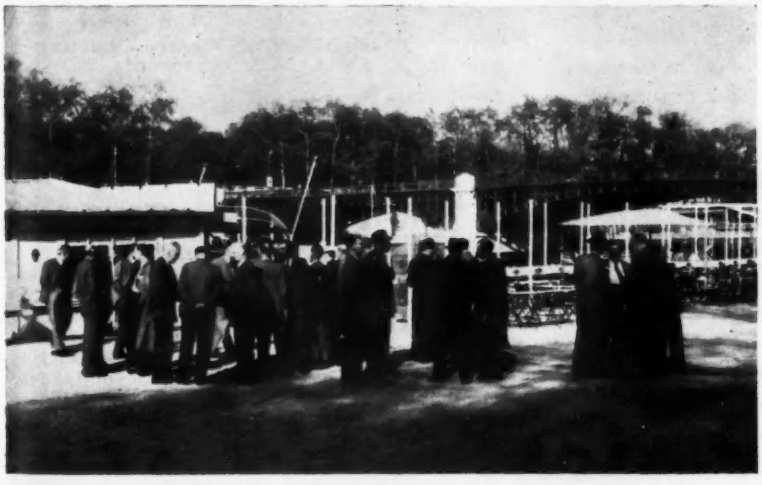
By H. J. R.

From Tuesday, April 27, to Saturday, May 1, 1954, thirty members of the Midland Junior Gas Association spent an interesting and enjoyable time in Paris. The idea of making this trip was first mooted some two or three years ago. It did not fructify, however, till Mr. J. A. Tomes, of Stourbridge, became Senior Vice President of the Association and was formulating his programme for the 1953-54 Session. It was decided to make up a party of about thirty who would be prepared to pay their own expenses and take their own time for the visit. In the outcome, exactly 30 members signified their intention of taking part, and work was started some six months ago in making the arrangements and contacts, so that a suitable programme could be arranged. The visit, it must be emphasised, proved most satisfactory, and the programme was carried out without a hitch.

It was decided that the travelling should be done by air. Those participating assembled at Elmdon Airport, Birmingham, on the morning of April 27 to depart to Heath Row (London Airport), whence the party departed for Paris. On arrival at Le Bourget, a coach was waiting to convey the members to the Hotel Moderne, where accommodation had been reserved.

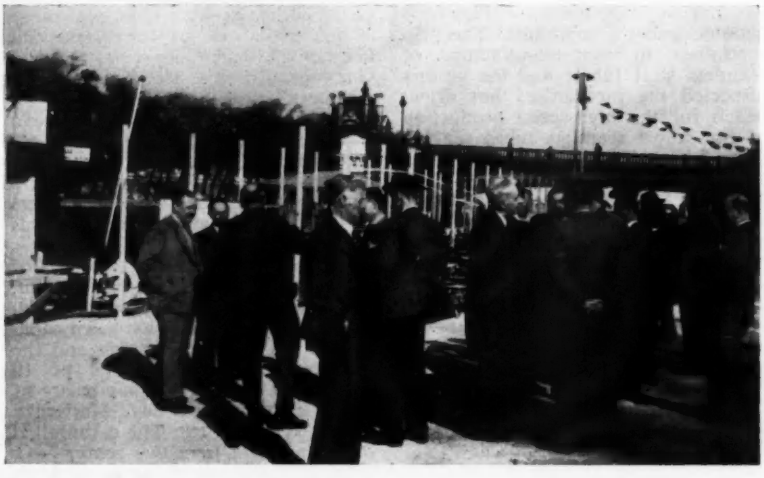
The afternoon was allowed for 'settling-in' for all except the President and the Secretary, who had appointments with representatives of Gaz de France, W. C. Holmes & Co., Ltd., the Bryan Donkin Co., Ltd., Fours Incandescent, and Humphreys and Glasgow, Ltd., all of whom had been the contacts in Paris and had made the arrangements for the various works to be visited. At this meeting the details were finalised. At five o'clock members were taken on a two-hour coach tour of the city.

On the following morning the party was divided into two parts, one consisting of the 'manufacture' members and the other those on the distribution side. Those on the manufacturing side were taken to a new coke oven installation at Alfortville, on the outskirts of Paris, by Gaz de France, where they spent an interesting morning inspecting the plant which is under course of construction. Completion is anticipated by October



The occasion pictured above was the dinner at the invitation of Fours Incandescent, showing (left to right) F. L. Atkin, M. Labrune (Gaz de France), H. C. Newman (Incandescent Heat Co., Ltd.), M. Marotel (Managing Director, C.I.T.C.), M. Delaruelle (Gaz de France), T. A. Tomes (President, Midland Juniors), J. Hanning (Managing Director, Fours Incandescent), M. Combet (Gaz de France), and H. J. Reynolds (Secretary, Midland Juniors).

On the left the party is seen at Pont Solferino, after a cruise on the River Seine, and below is another picture of the party after returning from the cruise.



next. The plant will have a capacity of 1,500 tonnes of coal per day, making 200 mill. cu. m. per annum. Production includes 400,000 tonnes of coke, 1,200 tonnes of ammonia, 5,000 tonnes of crude benzole, and 18,000 tonnes of tar per annum.

Invitation to inspect this works was through the courtesy of Mr. J. W. Tully, Paris representative of W. C. Holmes & Co., Ltd.

The second party, members on the distribution side, were taken to two works. First, the works of the Société Materiel Electrique de Controle Industriel (M.E.C.I.) was inspected. Members were welcomed by M. Faguet, President-Directeur General, and M. Marcorel, Directeur attaché a la Directeur General, who explained that the Company was founded in 1922 and manufactured all classes of pyrometers, including potentiometric type recorders and controllers. A complete range of flowmeters and pneumatic control equipment of the company's own design, including specialised control equipment for the gas industry, was seen in the various stages of manufacture. The well-appointed canteen and kitchen were also inspected.

The party then came to the second visit of the morning — that of the Compagnie Industrielle at Commerciale de Tubes (Montreuil). This firm specialises in the manufacture of seamless steel tubes; and the visitors inspected the mechanised hot drawbench for the high-speed production of hot-drawn seamless tubes ranging from 1 in. to 5 in. diameter. For this visit we were indebted to the M.E.C.I.; for the visit earlier to Fours Incandescent Mr. J. Hanning was responsible for the smooth arrangements.

Both parties coalesced at L'Oree du Bois—a restaurant set in glorious surroundings—for luncheon on the invitation of Gaz de France. Afterwards there was a motor coach tour to Pont Solferino, followed by a river cruise on the Seine. Dinner at the Mere Catherine and relaxation at the Cabaret Jockey completed the day.

The visit on Thursday morning was arranged by the Bryan Donkin Co., Ltd., and members were pleased to see Mr. G. F. Chambers present to welcome them. It was to the works of La Société Rateau at La Courneuve, which occupies some 50 acres. Members were highly impressed with the layout of this works, which employs some 2,200 with a staff of 800 technicians. The works is fitted with about 600 machine tools—and most of them are modern! The company has an iron and special alloys foundry and a department which proved most attractive to members—a foundry in which the 'lost wax' process for the manufacture of blades is utilised. Other departments visited were the boiler rooms, heat treatment laboratories, subsonic and supersonic wind tunnels, x-ray and gamma ray sections, and the ultrasonic test shops.

Just before the take-off—the party about to board the Viscount.

Lunch had been arranged at the Airport at Orly, after which enjoyable function there was a motor-coach trip to Fontainbleu, where the famous Palace was visited.

Dinner in Paris at the Wepler Restaurant, together with the entertainment provided, completed yet another day which had been interesting, instructive, and enjoyable.

The Friday visit was to the famous Gennevilliers gasworks and was made at the invitation of Humphreys and Glasgow, Ltd., and by permission of Gaz de France. At Gennevilliers members were welcomed by M. Russier, Production Engineer, who was supported by M. Frisquet.

Mr. F. C. Tatham, of Humphreys and Glasgow, Ltd., had made the trip from England to be with the members on this occasion, and his presence was much appreciated.

The Gennevilliers works consists of coke oven plant, producer gas plant, water gas plant, and a propane plant. The coke oven installation has a capacity of 1,200 tonnes per day and the producer gas plant consists of 10 generators, each having a capacity of 80 tonnes of coke per day. Marischka producers are in use. The carburetted water gas plant is in two parts:—

(i) The six old type sets, two of which have been converted to the Hall process.

(ii) Four sets of Humphreys and Glasgow (chequerless - carburettor type) which are housed in a most attractive building which impressed the visitors. In these sets gas oil is admitted to the carburetter and heavy oil to the generator. A calorific value of 540 B.Th.U. results. This is certainly a most impressive plant. The layout is roomy and instrumentation is extensive.

The propane plant is used for peak load demands and consists of 12 tanks each holding 50 tonnes of liquid propane.

Lunch, on this day, was taken at the Pavilion du Lac at Enghien — altogether an admirable choice of venue. The afternoon was a 'free period'. Finally came a dinner at the invitation of Fours Incandescent, which was held at the Union Interalliee.

At this most successful function members were honoured by the presence of numerous guests, who included M. Combet, Le Directeur General Gaz de France, and M. Delaruelle, Directeur de la Production et du Transport de Gaz de France. Both expressed their pleasure regarding the visit to the works of their hosts. The President of the Midland Junior Gas Association, Mr. J. A. Tomes, speaking in French, thanked all concerned for a wonderful experience.

Mr. J. Hanning, on behalf of Fours Incandescent, said how pleased he had been to make the acquaintance of the members of the Midlands Juniors and to realise that the proceedings of the visit had proved so successful.

Return was made by plane on Saturday afternoon, Birmingham being reached by 3.30 p.m.

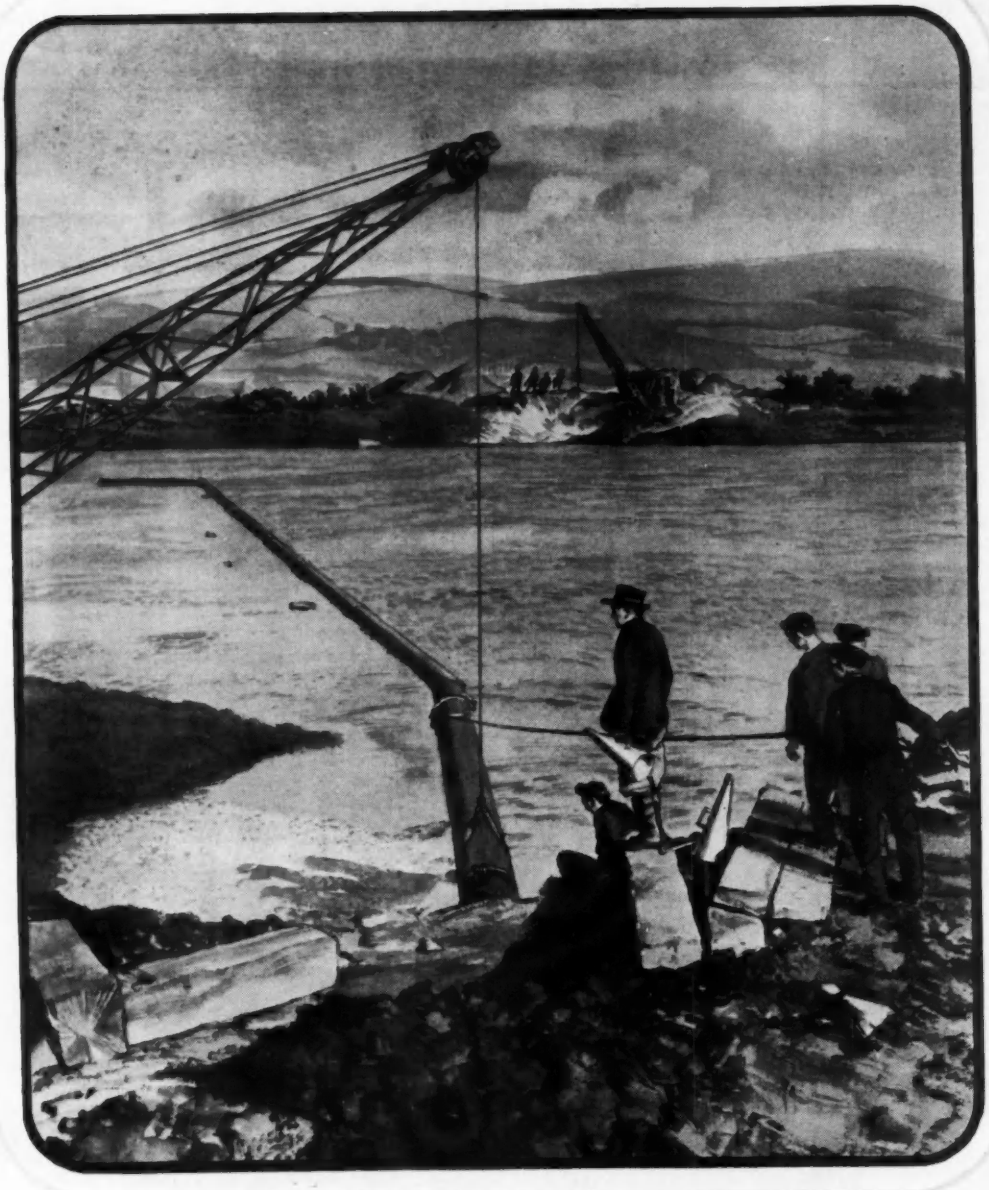
It is intended that a more comprehensive report of the visit shall be made subsequently, together with the showing of a film taken during the trip, at a meeting of the Midland Junior Gas Association during the 1954-55 session.

Gas is Helping to fight disease. In the newly enlarged Glaxo laboratories at Greenford, Middlesex, one of the largest manufacturers of injection products, gas is being extensively used in the hygienic processes of filling and sealing ampoules and vials. The automatic ampoule-filling machines, operated by masked, gowned, and gloved employees, incorporate gas burners which are used to seal the ampoules. Over 25,000 therms are used every year in the laboratories.

Champion Baker Mr. E. P. Purcell, winner of this year's British Baker Shield competition, baked his winning loaf by gas. Mr. Purcell, who works for G. P. Hall, Ltd., of West Ealing, London, produced a fine oven bottom Coburg with a good texture and pearly sheen in a gas-fired oven. By winning the shield he becomes best baker in England and Wales (Scotland has its own competition) having competed against 1,400 other bakers in this 50-year old contest sponsored by the *British Baker*.

The Universal Domestic Meter

Smith **Smith Meters** *Limited, 186 Kennington Park Road, London, S.E.11*



THE STEEL TUBE AGE

S & L steel main, 18½ in. outside diameter, with bitumen sheathing and externally welded sleeve joints, being floated out before sinking into its final position on the bed of the River Neath.

This is part of an extension of the West Wales Gas Grid carrying coke oven gas from the Abbey Steel Works at Margam to the Morriston Works of the Swansea undertaking.

STEWARTS AND LLOYDS LIMITED

GLASGOW • BIRMINGHAM • LONDON

The largest manufacturers S&L *of steel tubes in Europe*

DEVELOPMENT IN LINCOLNSHIRE SINCE 1949

FROM AN ADDRESS AS CHAIRMAN OF THE EASTERN SECTION OF THE INSTITUTION OF GAS ENGINEERS ON MAY 17, 1954, BY

BERNARD CLARKE,

M.B.E., J.P., M.Inst.Fuel.

The work of the district sections of the Institution of Gas Engineers is a vital contribution to the technical advancement of the gas industry. It provides the opportunity for interchange of experience, and a more intimate platform for the presentation and discussion of technical matters which are of material advantage to members and the undertakings they serve. I believe it is an advantage that their activities transcend the boundaries of the area boards. Fellowship and the free exchange of experience connected with our vocation deserve support, and it is gratifying that the confidence of the Eastern Gas Board in our activities is maintained. Again, the activities of the Junior Associations are most important and justify the interest and support of the senior sections. They form a vital part of the professional education of those who will progress to positions of greater responsibility. The area boards give every encouragement and are generous in providing facilities for the further education of their technical and professional staffs. Opportunities are there for those prepared to work; and the industry needs men who, with initiative and courage, will make personal sacrifice in training themselves to that state of ability needed to justify preferment. All who are in higher executive positions have realised the difficulties of filling vacancies requiring a high standard of education and technical qualifications. It is often said the industry is not attracting the right type of man. It may be that we have not publicised sufficiently the opportunities for a career in the gas industry. I thus commend the publication recently produced by the Institution, entitled 'The Profession of Gas Engineering'. There are also the two publications published by the Gas Council: 'The Gas Industry—Pathway to Opportunities' and 'A Career in the Gas Industry'. I have made these publications available to all the technical schools and education authorities in my Division.

When I occupied the office of President of the Eastern Association of Gas Engineers and Managers in 1935, my address was an attempt to present the problem of a small undertaking and to record some of the considerations which led to the installation of what was at that time probably the smallest automatic blue water gas plant. I was concerned with the problem of maintaining a standard calorific value gas of 500 B.Th.U. from horizontal retorts, and discussed the alternatives to 'overpulling' by dilution with producer gas or blue water gas. I was motivated by the theory that the greatest economy in carbonisation was in a 'tight retort' and dilution, if necessary, should be done by the admission of a carefully controlled diluent gas.

That address gave detailed consideration of the economics of diluting straight coal gas from horizontal retorts by 'overpulling', producer gas, and blue water gas. The working results obtained at that time when diluting with blue water gas were, for a period of six months,

89.98 therms per ton of coal carbonised
456 B.Th.U. calorific value
8.11 cwt. of coke per ton available for sale.

As a matter of interest, with coal at around 25s. per ton and coke at 20s. per ton (works), the net cost of coal per therm of all gas produced was 1.73d. The best figure we are getting to-day in modern plant is slightly in excess of 5d. per therm, while a price of 10d. per therm and over is not uncommon for plants of a similar output to that described in 1935, bearing in mind present figures with coal at around 84s. per ton, and coke at 92s. per ton.

In the Lincolnshire Division the latest figures for the net cost of coal per therm ranges from 5d. to 24d., and the cost of gas per therm into holder, including repairs and maintenance of buildings and plant, ranges from 8d. to 51.9d. per therm.

My reflections have impressed on me the great changes which have taken place during the last few years while we have been adjusting ourselves to the new structure. The major factor which has affected every one of us has been the nationalisation of the gas industry. There are of necessity varying opinions about public ownership; it has been a fruitful topic for politicians and the Press since its inception, and recently the subject for detailed survey by a Select Committee. Personal opinions must bave been influenced by personal experience. In this new era, I have been given changed responsibilities.

The address by Sir Edgar Sylvester entitled 'Nationalisation and the Individual' presented to the Institution of Gas Engineers in 1949 was salutary, vivid, and inspiring; its contents are as pertinent now as then. It would be inopportune to quote at length, but I commend its re-reading. He said that the change in ownership need not involve the suppression of initiative and individual effort. Have we maintained these characteristics? Have we conscientiously accepted our individual responsibilities and discharged them faithfully? Have we maintained 'pride in our work'?

The appeal which is constantly made for increased efficiency and productivity is not restricted to the craftsman and manual worker. It is a call to the engineer, manager, and administrator. It is as pertinent to the members of this Section as it is to those colleagues of ours who are members of a trade union. Efficiency and vigilance to detail are the chief weapons to maintain a competitive price for our commodity against the upward swing of the cost of raw materials and mounting capital expenses.

Historical and Geographical Considerations

At vesting date, there were 30 separately owned undertakings in Lincolnshire, eight of which were local authorities and 22 privately owned, with a diversity in size varying from an undertaking with an annual output of 2 mill. cu. ft. with 133 consumers to one with an annual output of 1,500 mill. cu. ft. with 20,500 consumers. The initial organisation was three sub-divisions comprising the North part of the County, the City of Lincoln with neighbouring undertakings, and the South of the County based on Grimsby, Lincoln, and Stamford respectively. In April, 1951, the sub-divisions were eliminated and the Lincolnshire Division was created.

The size of the County is 2,700 sq. miles with a population of 696,500; the distance between North and South is 70—80 miles, and from East to West 35—50 miles. The population is widely scattered with the principal townships separated by minimum distances of around 20 miles. The salient point which had to be appreciated in setting-up any organisation was the geographical factor; and this consideration clearly indicated that subdivisional administration was too de-centralised to provide adequate strength and resources. Furthermore, it would of necessity have required three distinct administrative centres, each needing a specialised staff and a triple line of flow and return with Board Headquarters.

The area of Lincolnshire is two-fifths that of the East Midlands Gas Board as a whole, while the gas produced approximates 9% of the total produced in the area. At vesting date there were 30 works; and while some are very small, it must be remembered that each serves a section of the community which is entitled to the best gas service it is possible to provide. To secure this standard they are of necessity subsidised by the Division. Development schemes which may have appeared uneconomic when considered on a purely local basis have reflected favourably upon the Board's public relations. It is possible to quote a number of small towns where prestige has been

tremendously enhanced, due to the improvement in supply and consumer service made available by resources which were beyond the capacity of the local undertaking.

The cost of improved service in these rural communities bears a much more favourable public relations angle than a similar expenditure on other more conventional forms of advertising, and time has vindicated this consideration for the consumer.

Travel in many cases between undertakings by public transport is virtually impossible in Lincolnshire, and this fact must be coupled with the very small size of many of the undertakings. For example, it may be mentioned that to get from Lincoln to Mablethorpe by public transport would take three hours travelling time in each direction, without making any allowance for time absorbed in waiting for connections and fitting in the visits to suit the time of travel. By private car from Lincoln, the three furthermost undertakings (Grimsby, Skegness, and Stamford) can all be reached comfortably within 1½ hours. These facts further emphasise the scattered nature of the Division, and I know similar conditions obtain in parts of the area of the Eastern Gas Board.

Integration Schemes

There were obvious possibilities for integration. Within the first few months after nationalisation two link-ups were accomplished:—Market Deeping was supplied by Stamford, and the Long Sutton and Sutton Bridge undertaking was taken into Spalding. Since then, Kirton has been absorbed into Boston, Bottesford has been given a supply from the Nottingham—Grantham bulk supply

DIAGRAM SHOWING GROUP ORGANISATION AND LINK UP MAINS IN THE LINCOLNSHIRE DIVISION

main; the four smaller undertakings being closed down. Woodhall Spa and Horncastle are about to be linked to Lincoln, while Grantham will receive a supply from Nottingham at the end of this year. This supply will continue eastwards to Sleaford and Heckington. In the interim, Heckington is to take a supply from Sleaford this year.

There was a link between Grimsby and Cleethorpes at vesting date which enabled the Grimsby undertaking to pass some gas into the Cleethorpes distribution system. This is now so arranged to permit the passing of gas in either direction between the two distributing systems, and ultimately a trunk main is to be laid to integrate the two stations. Production will be concentrated at Grimsby, and Cleethorpes will become a holder station. The map indicates those links which have been affected and further integration schemes planned to be accomplished in the next few years (Fig. 1).

Due to the availability of coke oven gas at Scunthorpe, the Board has approved in principle a grid system for North Lincolnshire, and it is anticipated that manufacturing stations will eventually be reduced to seven works. At the moment there are 26 manufacturing stations, four of which will be closed down this year. You will not expect me to give details of these schemes, but their advantages have all been carefully assessed and justified financially. It has not been a matter of integration for integration's sake.

Parts of the rural districts are being subsidised by the remaining parts of the Division. In a number of the smallest undertakings the average price received from the domestic consumer is less than the cost of gas produced, and in most cases a bulk supply is the only possibility of relating the selling cost of the gas to the cost of production. Works with an output of less than 100 mill. cu. ft. per annum are not able to produce gas at an economic figure. There is no prospect of operating the very small works economically, and for undertakings under 100 mill. cu. ft. per annum there is seldom a case for maintaining their existence. Generally there is a balance between their costs and the cost of production at the major undertaking sufficient to justify the cost of integration. Each case has to be decided on its merits, and this obviously depends on the demands which need to be met.

Formation of Groups

On the creation of the Division, it was decided to divide the County into groups, so arranged that each group contained at least one major undertaking with staff and equipment necessary for the efficient day-to-day running of all the undertakings within the group. Grouping was, therefore, based upon the nine major undertakings—namely: Grimsby, Scunthorpe, Skegness, Lincoln, Gainsborough, Boston, Grantham, Spalding, and Stamford—which together represent 90% of the Divisional strength in gas production. These groups are clearly indicated on the map, which shows the splitting-up of the County and the situation of the large undertakings which have been established as the focal point for the administrative group.

To create efficient groups, it was necessary that each should have an undertaking of some size and standing to provide a focal point, bearing in mind that the smaller undertakings had no technical staff whatsoever, and, indeed, little or no resources other than the capacity to produce gas. Such facilities could be economically associated only with the major undertakings, which had in addition suitable administrative and accountancy staffs. Grouping in such a manner utilised to the best advantage personnel who had in many cases been accustomed to the complete control of their undertakings. Any other type of control at this stage of development, either functional or sub-divisional, would have been wasteful of the available resources.

A further persuasive consideration for the principle of grouping, particularly in the smaller communities, is the intimate association existing between consumer and management. Retention of this atmosphere in the early stages of nationalisation was essential.

Geographical considerations remove divisional staff from the day-to-day operation of the undertakings. The latter is the province of the man on the spot. It would be depressing to divorce management from the right to manage. The trend is towards larger units, and the future control in the industry towards a functional organisation. Local management must conform to board policy, but that is not a reason for any officer, in whatever capacity to indulge in a frustration complex. Keenness, loyalty and interest are as necessary now as in the old days This does not, however, detract from the advantages of a higher direction by specialist staff not economically available at local level, neither does it lessen the need

and value of initiative on the spot. Local standards are important to maintain, but there is immense value in the availability of additional resources in time of emergency. The incident of the tragic floods on the East Coast provided the example where the Divisional resources saved the local undertaking.

Grouping has provided an intimate and speedy contact, and there is the closest liaison between group managers and divisional staff. The dissemination of information or instructions is direct, and in addition, regular meetings are held at which group managers are kept informed of the policy of the Board, and are thereby provided with the opportunity of reflecting the reaction of staff and public to administrative and Board policy. There are regular meetings of technical staff and sales staff with the object of attaining the highest standards of efficiency and the utmost keenness in developing the Board's business.

There has been a gradual building-up of a strong specialist team at Division level which is of immense value to all undertakings. There is complete co-operation between divisional officers and group personnel.

Many undertakings were progressive in outlook, operating efficiently and providing the community with a first-class service. In Lincolnshire there were undertakings of this calibre whose works and future plans were a tribute to progressive ownership. However, in many instances nationalisation has promoted development and expansion of the industry not previously visualised. In some rural areas gas supply was falling into disrepute. In Lincolnshire we had such cases. A number of undertakings were in a serious state of decline, and it is fair to say that other undertakings would have experienced difficulty in financing the development which has since taken place.

Two Fuel Industry

The industry has become established as a two fuel industry, and our future prosperity depends upon the development and expansion of the use of our two fuels. This statement is not new, but re-emphasises our responsibility to make the fullest use of the opportunity available for developing the domestic coke market. The contribution to revenue from the sale of coke is considerable. In my Division it amounts to 37% of the revenue received from the sale of gas.

We have to overcome a certain justifiable prejudice against gas coke as a domestic fuel. Greater attention has to be paid to the treatment, grading, and marketing of coke if we are to maintain the sales and retain this high proportion of our revenue. The industry now realises the need for a nationally recognised standard coke, and the move to establish a nomenclature for different grades is bound to assist the acceptance by the public of a fuel which it has previously resisted.

The considerable developments effected since nationalisation are an indication of confidence in our industry. Integration which has taken place and is planned makes available a gas service in many rural areas for the first time and provides a field for future expansion. In an area such as Lincolnshire, it is difficult to visualise that sufficient financial resources would have been available for the development of the gas supply had it been precluded from the financial support now available. The capital expenditure involved in providing new plant, and the heavy cost of mains to housing estates can only be justified by obtaining a reasonable demand for gas. While the figure of 120 therms per domestic consumer per annum may be considered satisfactory, further expansion is essential.

The geophysical survey for natural gas, if successful, may open up a new vista, but our concentration must not be relaxed in the development and utilisation of our existing resources. The skill of the engineers, the energy of the salesmen, the ability of the craftsmen, the efficiency of administrators and accountants, allied to faith in and loyalty to our leaders, will ensure the future prosperity of our industry.

MANAGEMENT TRAINING COURSES

By H. BUCKLEY—*Continued from p. 436*

The Urwick committee found that both industry and the university authorities had been slow to recognise that management can be made the subject of formal study, and stated that 'industry has tended to lay exclusive emphasis on practical experience; universities, in fear of narrow vocationalism, have not in general developed the subject as a broad intellectual discipline.' Since 1947 considerable attention has been given to the problem of the relationship between universities and industry.

In 1949 the F.B.I. organised a university and industry conference, which found that 'industry had a need for those personal qualities which the universities can develop, by their methods of study, and by the community life many of them foster.' A further similar conference was held in 1952 and this later conference found 'little support for the teaching of administrative studies at the undergraduate level.' It was considered that the universities could make their most effective contribution in the broader educational field by helping industry to continue the education and training of the graduates and men of equal ability it had recruited. Courses designed jointly by industry and the universities for men of this type who had several years in industry, and were 25 to 30 years of age, would be of great value.

It is interesting to note in the conclusions of these two conferences

(1) Recognition of the need for training in management and administrative subjects.

(2) Recognition of the advantages of community life in developing those qualities which have been referred to as the abstract qualities.

(3) Recognition of the fact that management training should be backed by industrial experience.

The logical outcome of these findings leads to the further conclusion that residential courses in management fill the requirements in the field of management training better than other types of courses, in that they take a mature trainee of a predetermined age group and set him under conditions best suited to develop the abstract qualities while teaching him the techniques.

The pattern of education in the United States is so different to that appertaining here that it is difficult to make a firm comparison. There are three main types of management training courses in the United States. Firstly there are the undergraduate courses leading to a first degree, usually in business administration. These courses normally require four years full time study. It is possible to obtain a first degree in business administration by attendance at evening classes. Secondly there are the graduate courses and these might be loosely compared with what we would term post-graduate courses in this country. Some of these courses are designed for candidates who have just taken their degree. Others require as a condition of admission some years of experience in industry or commerce. These courses generally lead to a Master's degree in Business Administration (M.B.A.). Finally there are the advanced management courses for high level business executives such as are run at Harvard and other universities. These courses are comparable to the residential courses now being organised by various authorities in this country.

There are not, in this country, many facilities at the universities for the training of post-graduate students in management studies. The London School of Economics (Department of Business Administration) runs a one-year post-graduate course and the curriculum includes business administration in the light of economic analysis, industrial production and distribution, business finance, industrial

relations, personnel management, methods of wage payment, law relating to business, management accounting, business statistics, and market research. The Manchester College of Technology (Department of Industrial Administration) also runs a one-year post-graduate course in business management which includes the elements of economics, history of industrial organisation, industrial relations, industrial law, industrial management, purchasing, storekeeping, transport, work measurement and wage systems, statistical methods and factory costing.

Probably the greatest advantage of immediate post-graduate courses in business management is the fact that the student learns the techniques during the period of his career when he is of least value to his employer. One fears, however, that he may come to industry full of dogmas and ideas which he may find difficult to relate in the practical field—if, indeed, he is ever called upon to relate his management training in the practical field in his junior position.

Apart from full-time post-graduate courses, studies can now be taken at many technical colleges either by day release or by evening study. A common intermediate examination in management studies has been agreed by the Ministry of Education and certain professional institutions including such bodies as the Institute of Industrial Administration, Institute of Personnel Management, Institute of Cost and Works Accountants, and the Institution of Production Engineers.

Residential Courses

Residential courses have recently come to the fore in management training. The reason for their gradual growth is probably to be found in the fact that they provide an intensive course in an atmosphere which can develop the personal qualities by the community life they adopt. Probably the best known and model residential course is that run at the Administrative Staff College at Henley.

In addition to the 'Henley course' there are now a number of other residential courses run by a combination of industrial and educational authorities. An experimental course was run early in 1953 by the University of Sheffield and there was also a residential course for junior managers run by Cambridge University at Madingly Hall from July 10 to 31, 1953. Oxford, not to be outdone, ran a residential summer school for young business executives at Worcester from July 27 to August 10. The British Institute of Management organised a four-week residential course in London in November, 1953.

The manner in which the courses already referred to were conducted was very similar to the residential course in management studies run by the Institution of Gas Engineers at Brooklands Technical College, Weybridge from June 7 to July 25, 1953. The Institution course was in the field before the universities, and it is a tribute to the progressiveness of the Council of the Institution that this should be so. The course was made possible by a grant from the Woodall Duckham Company to the Institution, to be used for educational purposes. It was the first course of its kind and as such was largely experimental. The Education Committee of the Institution, the permanent officers of the Institution, as well as the College authorities, must be complimented on the planning and organising of the course.

The College authorities had had some previous experience of residential courses, having run one of 13 weeks duration for the coke oven industry, shortly before the I.G.E. course. It is understood, however, that those attending the coke oven course had not, as a body, had the same measure of managerial experience as the students from the gas industry.

There were 15 students on the course and it was very fortunate that this number was suitable for the College in so far as the accommodation was concerned as well as being what is generally considered to be the number for an ideal group. In addition it allowed each of the 12 area boards to send one nomineee and left room for three nominees from the Society of British Gas Industries.

The course was highly concentrated and the field covered very wide. The former aspect was necessary so as to allow the full curriculum to be covered in the early summer. Most of the members attending held quite senior appointments and there would have been more difficulty in releasing them from their normal duties during the winter months.

The standard of the lecture was very high. Persons most prominent in their particular sphere visited the college to lecture on their specialist function. In addition to the lecture further benefit was derived from the 'syndicate system'. After each lecture the students divided into three groups of five persons to discuss some question relative to the subject. Each group or syndicate had a chairman and reporter chosen by rota.

In full committee practice the proceedings were recorded on a tape recorder. This was a most useful exercise, for it was possible for each member to hear himself as others hear him in committee. There is no doubt that on hearing the 'playback' many of us felt we had said things we could have left unsaid. Other failings, such as hesitancy, abruptness, and not talking to the chair were also noted, and without doubt most students taking part noted their own particular shortcomings in a way that will long be remembered. Nowhere have I seen any mention of a tape recorder being used on a residential course, but I do feel that its value cannot be over-rated on any course which includes committee practice and self expression.

The basic purpose of all management training is to improve the standard of management. Day and evening courses are, however, more concerned with the techniques, while residential courses attempt to cover the techniques and also to develop the abstract qualities so advantageous to one engaged in a managerial position. There can be little doubt that anyone who is climbing the managerial ladder will benefit from part-time day or evening studies of such subjects as are found in the syllabus of a management course. Similarly, any graduate following a course of post-graduate studies in management subjects will also be more fitted for future responsibility. It is, however, debatable whether a training in management subjects before the student has any managerial or even industrial experience is wise.

Residential courses for senior officers, or supervisory and administrative grades, have the advantage that the student has had some managerial experience and can more readily relate the subject matter to his personal and practical experience. Courses of a residential nature are not intended to cover a strict curriculum of the form covered by a technical college, and the content of the courses has to be varied so as to be of the correct type and standard for those attending. They do not purpose to give a complete training for a managerial position. The lectures do not generally lay down any rules or formulae which the student is implored to employ or perish. Rather do they seek to discuss all aspects of a particular study and leave the 'student' to arrive at his own conclusions. They serve to widen the horizon and cultivate an inquisitiveness so that the student, having considered the subjects, shall set about acquiring a fuller understanding of those techniques which he feels can be of use to him in his particular sphere. Further, a group of men are thrown together in one community and, as a consequence, have to learn to live and enjoy life together. It is not suggested that a man will return from a seven-week course having a completely changed and improved personality; but he will, if he is honest with himself, have noted his shortcomings, and he can by his own effort in the future do much to eradicate them.

DISCUSSION

Mr. D. H. Griffiths (Solicitor, Wales Gas Board) said his only qualification to speak about Mr. Buckley's paper was that he had the privilege of attending the administrative staff course at Henley for three months last year. He was a great believer in residential courses. They could teach the approach to management in a scientific manner. They could not provide the answers to the many questions which arose in the day to day problems of management, but they could teach people to think in such a way that they were most likely to provide the right answers to those problems when they arose. In the second place they could act as an introduction to the many problems of which one had no experience until one actually became a manager; and in the third place they could serve to broaden the outlook. He was a believer in these courses to the extent that he thought that in 10 years' time attendance at such courses

ought to be a prerequisite for anyone seeking appointment to a managerial position. So far as the Wales Gas Board was concerned, while it might have gone further, he felt it had gone further than any other gas board, having regard to the number of its employees. It had sent two persons to the administrative staff college and two to the Brooklands course. He ventured to offer two warnings; the first was that a manager must be prepared to send his very best official to such a course, the man who could least be spared. Secondly, they must not adopt the attitude that training for management could be left to these residential ocurses. One of the most important duties of any manager was to train his successor.

Apprenticeship Still Vital

Mr. W. Morland Fox (W. J. Jenkins & Co., Ltd.) said his company were whole-hearted supporters of these courses and they counted themselves fortunate in that last year one of their juniors was selected to attend one of them. This year they had again been fortunate in securing a nomination. While they were whole-heartedly in favour of the courses they had one query at the back of their minds—were these courses going to replace the old method of training by the apprenticeship system? He considered that system most essential as the backbone of training in any form for a managerial position. It was of great value to have worked one's way through the shops, because it was there that one came to know men and to know the technique of production in whatever line of industry one was interested in. While he considered these management courses were desirable and should be continued, he thought they must never lose sight of the fact that the basic start of training was in the apprenticeship system allied with technical training. During theoretical training, whether in university or technical college, attention should be devoted to the basic principles of management.

Mr. J. T. Haynes, President of the Institution of Gas Engineers, said he had a part in the organisation of the first of the Brooklands courses and he had the privilege of spending 24 hours with the students at the college. It was one of the most thrilling experiences during his year of office. No-one could doubt that the courses were serving a very useful purpose. The youngster coming forward in his apprenticeship found that it was not long before he was put in charge of one man, or perhaps two men, and as he advanced so his degree of responsibility was increased, and the management training courses sought to help him to rise to those responsibilities. The courses were intended for those who had already passed through the initial stages and had reached some degree of eminence in their profession.

Fine Material Coming Forward

The level of the young fellows who took the course gave them absolute confidence in the future of the gas industry. They had some really fine material coming forward, and those who, like himself, were approaching the time when they must hand over to their successors could face that prospect with confidence that those who followed them were going to run the industry better than they had done. One other impression on his mind was the feeling that there should be equivalent courses, though perhaps shorter, for the even higher executives. In congratulating Mr. Buckley on the way in which he had described the great value of the courses he reminded members that while the Gas Council and the area boards had supported them it was the Institution that started them, and they were proud of what had been achieved.

Mr. M. S. Gaskill (West's Gas Improvement Co., Ltd.) said the engineer and manager of the present day had attained his position by the hard way. The new organisation seemed to have given birth to a crop of new titles, and in some instances the engineer and manager seemed to be dropping out. The increasing size of the gas manufacturing unit of necessity gave scope for the specialist, and the ever-growing volume of knowledge all tended to the recognition of the specialist. Whether that would be all to the good of the industry was a debatable matter, but even the specialist must have some training in management, and these courses would be a great help.

The Very Small Manager

Mr. W. Clark Jackson (Coal Officer, Wales Gas Board) suggested that one of the most important features of good management was that the manager himself was required to control his own services to his undertaking. He feared there were managers who endeavoured conscientiously to control their staff and employees but who did not take any great interest in controlling their own services to the undertaking. The manager should break up his day into almost cast-iron divisions so as to ensure that he was not unduly withdrawn from his managerial operational work at those times when his services were most essential by, for example, a travelling representative who though he promised to detain him for not more than five minutes often kept him for 50 or more. Mr. Buckley in his paper had not offered any solution of the problem of the very small manager who could ill be spared from his post. The small manager was outside the scope of management training as described by Mr. Buckley, but under the present set up in Wales the small manager had greater opportunities than formerly by virtue of the group organisation and the technical assistance which the Wales Gas Board had been able to provide. Conditions were vastly better than in the past, but even today very few of the managers of larger undertakings would care to exchange their positions with the very small manager.

Mr. E. J. Spurrier (Sales Director, Parkinson & Cowan Gas Meters) said he agreed in the main with what the courses set out to do, and intended to do, but he had one criticism of the curriculum. The syllabus appeared to him to contain a lot of subjects of a very nebulous characer, and in trying to discuss those items and in writing theses on them it was very difficult to avoid a series of platitudes. His only criticism was that the items in the syllabus should be a little more realistic.

Deputy Chairman's Warning

Mr. R. S. Snelling (Deputy Chairman, Wales Gas Board) said Mr. Mervyn Jones, Chairman of the Board, regretted that important work in North Wales prevented his attendance; he was also sorry that important work on behalf of the gas industry in Great Britain had prevented the attendance of Mr. E. M. Edwards, who was keenly interested in the subject of Mr. Buckley's paper. He hoped no-one would feel that anything he said was intended to throw cold water on management training or in any way to influence the enthusiasm of those who were responsible for the courses, but he hoped—and he said this deliberately—that those who participated and those who organised would never feel that the courses were a substitute for the older methods which had been practised for very many years. By all means let us have these new ideas, but he hoped they would not be regarded as a substitute for the methods of the past.

He recalled that after the last war he met a selected number of ex-service men of 25 to 30 years of age, who were invited to undergo an intensive course in management for three months. They were a bright lot of lads. He had the privilege of lecturing them once during each course. The lecturers were men who were supposed to have had actual experience of management in various industries. He used to say to them: 'You are going into industry. You are ambitious to become a manager or a senior official in the industry you take up, and you will probably feel as so many others have felt before you, that if you get a job and if you do it well you will automatically get a promotion. You never made a bigger mistake in your life.' The majority of people in an industry did their job well, but they were not necessarily the people who got to the top. Those who got to the top were those who could not only do their own job, but who knew how to do the job of the men above them. They put in extra time and energy and thought, and considered where they wanted to go and how best to get there.

Managers Allowed to Manage

He had spoken on management at the chairmen's and conveners' conferences, and those who had heard him there would forgive him if he repeated himself in saying that the Wales Gas Board regarded as a test of good management the capacity for getting the best out of oneself and those one had to manage. They might learn a lot from their leaders, but mainly it had to come from within. He imagined that nothing could be more irksome than to be designated a manager and not to be allowed to manage; that was one of the fundamentals of the Wales Gas Board's policy—the giving of the necessary authority to carry on without command.

Mr. A. Pickard (Swansea) said the idea of the 'syndicate'—a cross-section of the administrative and executive personnel gathered together to pool experience and knowledge—was a new thing in Great Britain and it had come very much to the fore since the war. The first thing these bodies admitted was that their students would be well advised to secure their experience in their respective industries, and only then should they proceed to the college or the course. The object was to pool knowledge, ideas, and experience so that when one went away one was less likely to make those mistakes which would otherwise be probable.

Mr. Buckley, replying to the discussion, said he could endorse everything that Mr. Griffiths had said. With regard to Mr. Morland Fox, he did not think the management training course would do away with the old system of acquiring knowledge by experience. One of the speakers had suggested that it might be well to draw students from more than one industry. In the case of training for higher executive positions it was not necessary to draw people from one industry, although the Institution of Gas Engineers course was primarily concerned with gas engineers. Since nationalisation we had had a far greater degree of specialisation, but besides the specialists we

must still have top level administrators, and there was a necessity therefore for a course which would give a wider background to all the specialists, and that was what the Institution had in mind in forming a course purely for gas engineering members.

Mr. J. Powdrill (Cardiff), proposing a vote of thanks to Mr. Buckley, said he had hoped that Mr. Buckley would come back from the course with the answer to the question as to where management ended and administration began; instead he came back with a lot of abstract ideas. From his own experience he had found that management consisted of a number of functions, among which were planning, organisation, staffing, directing, co-ordinating, reporting upon and budgeting for financial control. At the same time the executive had a lot of things to think about; he had to know how to produce economically whatever he was offering for sale; he had to know his market and his consumers, and particularly the market and consumers served by his competitors. He also had to try to have a wise investment policy, considering for instance what new plant and equipment to buy, and how to finance it; he had to be intelligently aware of economic developments, and to be able to meet them with enterprise and ability.

Mr. O. P. Cronshaw (Rhyl) seconded the vote of thanks, which was briefly acknowledged by Mr. Buckley.

DEVELOPMENT OF SAFETY MEASURES

FROM A PAPER TO THE EASTERN SECTION OF THE INSTITUTION OF GAS ENGINEERS ON MAY 18, 1954, BY

D. W. AULT,

Divisional Engineer, Lincolnshire Division, East Midlands Gas Board.

I believe there is still a feeling among operating staffs that any edict on safety issued divisionally or from Board level is just another tiresome regulation, but that, if the reasons for some of the steps taken could be made clear, the regulations themselves would not only be better understood, but would be operated with more enthusiasm.

At vesting date the East Midlands Gas Board assumed responsibility for 99 undertakings, and although several large companies and large corporation undertakings were included, there was in the whole of the area only one safety officer. It was obvious from visits to works that at some both safety measures and safe working practices were almost non-existent, and at others considerable improvement in the existing standard was needed.

It was impracticable at that stage to deal in detail with each works, and it was felt that the best method to adopt was to issue guidance on the standards required and the steps to be taken by the local management to meet the standards. Due to the large number of instructions which were then being issued by Board Headquarters, necessitated by the organisation of the area, it was essential that any instructions issued should be short. Otherwise it was certain that they would not be read and the whole purpose of their issue would be defeated.

It was decided that we would accept the possibility of allowing some of the small fish to escape, providing we caught the big ones. For this reason a set of instructions was drafted under the title 'Preliminary Instructions on Safety,' the guiding principle behind which was that they would deal primarily with those circumstances which could lead to very serious or even fatal accidents.

The three types of accident which are most likely to be fatal and are unfortunately most common in the gas industry are gassing, explosion, and trapping under heavy transmission or conveying machinery. It is appreciated that electrocution and falls are omitted from this list of causes, but it must be borne in mind that at this stage the Board was in a position to apply first-aid measures only.

The document mentioned was issued to all local managers shortly after vesting date; and on two occasions at meetings shortly after, instructions were given that the document should receive the widest publicity.

The following figures are abstracted from the annual report of the Chief Inspector of Factories for 1948. Appendix III, pages 140 and 141 (Analysis of all reported Accidents).

Gasworks Section.

Total accidents reported	1,626
Due to prime movers	16
Due to lifting machinery	41
Due to explosions	83
Due to gassing	1
Due to transmission machinery	13

When more orderly methods of procedure were introduced, the use of the document was confirmed by the issue of the Board's standard book 'Safety Instructions,' which deviates little from the points made in the original preliminary version. As it now stands, the document consists of 14 sections. The first and longest section takes up approximately one-third of the text. It deals with the opening of vessels which have contained gas, and in this context it is specifically stated that the term 'vessel' includes gas mains. Although the steps necessary to ensure safe opening of plant run to 15 sub-sections they may be summarised by stating the fundamental principles involved, which are as follows:—

(i) Any vessel or gas main must contain either gas under pressure or must be completely isolated from all gas connections and must contain only air.

(ii) The planning for the isolation of a vessel from the gas stream must be carried out by, and the actual supervision of the job must be under the sole control of, a technically-qualified competent person.

Two different types of job were envisaged: The first when a man has to enter the vessel, in which case the isolation of the vessel should be by either a blank flange in the main, or two locked valves with an air vent between them. Secondly, where entry of a person into the vessel is not required, and the vessel is to be opened for a short period only, less stringent methods of isolation are permitted, of which the least is two gas bags in the main with the space between the bags vented to atmosphere.

The permissible pressure in a main which is 'bagged-off' is laid down for various sizes of main, varying from 8 in. W.G. in 10-in. diameter mains, up to a maximum of 5-in. W.G. in 30-in. diameter mains.

Reference is made to the need for drawing-up a detailed programme of operations before any job involving interference with connections in the gas stream is undertaken. The preparation of a detailed programme for even the smallest job is an essential part of the operation. It is essential, too, that all programmes should be issued with and refer to a key plan of the gas connections under consideration; and for complete safety all gas valves on the works should have individual numbers which must appear on the plan and in the text. Any programme drawn up should always be checked by a second responsible officer when it has been completed. This second person should go through the scheme in detail to ensure that no mistake has been made and no important point has been overlooked.

One particular detail in connection with these shut-down operations which appears frequently to be overlooked is the need for local isolation of the job. It is not safe to break a gas connection more than a few feet from a shut valve, even though inert gas purging has been employed, unless the valve is of the double-faced pattern and the space between the faces is vented to atmosphere. Similarly in no circumstances must lengths of new main be coupled up to a live valve and left with the free end open to the atmosphere. Such an arrangement leaves the possibility of an explosive mixture forming in the length of main due to a slight leak past the valve. A quantity of explosive mixture of gas and air of probably less than 150 cu.ft. is sufficient to produce an explos on

which could have fatal consequences. To form such a mixture only 15 cu.ft. of coal gas is required. Hence the reason for the Board's stringent isolation precautions.

Gasholders

As early as July, 1949, the Board issued 'Water-sealed Gasholders—Instructions for putting into or taking out of commission.' The document, which is based on the classic purging papers by Birks and Silver needs little comment. Originally it was written expressly to cover the use of inert gas made in a purging machine but, due to the number of small holders to be purged, was extended in December, 1949, to cover the use of carbon dioxide in cylinders.

The arrangements for carbon dioxide purging, although less expensive than the haulage and installation of an inert-gas generator, are still complicated due to the use of steam; and it is of interest to note that successful experiments in the use of solid carbon dioxide dropped into the holder were carried out, although this method was not generally adopted. More recently the use of bottled nitrogen has been officially included in the instructions, though the use of this gas for small holders and all minor jobs has been universal in the writer's Division for nearly two years. Full details of the use of nitrogen as a purging medium have been given in the recent paper by Forbes.[3]

Chains, Hoists, and Lifting Gear

Attention was focused in July, 1949, on the need to ensure strict compliance with Sections 22 to 24 of the Factories Act which deal with the inspection and testing of lifting gear and appliances. The fact that most of the Board's inspection work is carried out by independent authorities would seem to provide sufficient safeguard, but it is amazing how little attention can be paid in some quarters to the authorities' recommendations. Within the last nine months, the writer discovered lifting gear which had not been inspected at the prescribed intervals, and this occurrence was not at a small works. Quite recently it occurred to the writer to enquire what happened, for example, to a sling chain condemned by an inspector, and as a result instructions have now been issued that all gear condemned as unsafe must be destroyed under competent supervision. 'D' shackles, for instance, are burnt into two pieces with an oxy-acetylene torch.

At present all inspection reports on lifting appliances and gear, boilers, and air receivers are forwarded by the inspecting authority to divisional headquarters, where they are sorted by a technical officer. Satisfactory reports are forwarded in duplicate to the group manager concerned so that he can, if he so desires, maintain duplicate records at the group headquarters. The original copies must, of course, be forwarded to the works concerned for attachment to the general register. Reports on which action is required are forwarded to group managers after the items requiring attention have been specially marked, and a simple 'follow-up' procedure is operated from divisional headquarters to ensure as far as possible that all the points receive attention. More than this cannot be done from divisional headquarters. Effective control of statutory requirements for lifting gear, etc., can only be maintained at group or undertaking level. It is, therefore, of fundamental importance that local responsibility should be clearly defined and that all supervisory staff should have a clear understanding of the regulations.

Potential Danger Points

Unfortunately, a number of regulations have had to be issued as the result of accidents of varying degrees of severity. Arising from an accident of a minor nature was the instruction to guard the couplings on the shafts driving the index counters on Connersville meters. This was issued subsequent to an employee fracturing a finger due to his cleaning rag catching on the coupling. It is surprising that this risk, which falls into the elementary category of a revolving shaft, should not have been previously observed, and indicates how important it is for everyone to be on the look-out for potential danger points, and not only to deal with them on his own works but to circulate the information throughout the area.

In the category of safety instructions arising from severe accidents comes the Board's 'Safety Instructions for Electrical Equipment,' the need for which was realised primarily as the result of a fatality to a contractor's employee. The circumstances of this electrical fatality were somewhat unusual. Two contractor's employees were working on the top of a horizontal retort bench which was covered with a deep layer of fliers. They were using a portable hand-lamp supplied through a two-core cable (one phase and neutral) operating on 230 volts from a three-phase system. The supply point to which the lead was connected was fused in both phase and neutral. The lamp had been removed from the holder. The hand lamp was dropped and the fliers short-circuited the bare electrodes with the result that the fuse in the neutral 'blew.' At this moment one of the men was handling a sling chain which was in contact with the bench ironwork, and it is assumed that the current flowed to earth from the live lead through the bed of fliers to the man and thence via the sling chain and bench ironwork. This man was electrocuted; but the second man, who was not in intimate contact with a good earth, escaped with a slight shock.

Although fuses do not normally provide safety from electrocution, it seems probable that, if in this case the neutral had been unfused, the fuses in the live side would have blown immediately the lamp-holder was dropped, due to the short-circuiting of the electrodes. This point is now covered in the Regulations in the following terms:—

'Earth lines must not contain switches or any other means of breaking their continuity which do not necessitate the use of tools. Earth lines may only be broken by a person authorised by the works manager.'

Electrical safety is probably more dependent on good installation and maintenance than most other sources of power. In consequence, a considerable part of the Board's electrical safety instructions deals with installation work—to such a degree that, in fact, the instructions are probably used as much as a guide to good installation practice as they are for their primary purpose of safety.

The frequency with which H.M. Chief Electrical Inspector of Factories refers to the need for heavy-current earth-testing in his annual reports will have been noted. Partly as a result of these comments considerable discussion took place at the E.M.G.B. Sub-Committee on the best means of meeting this requirement. It was eventually decided to employ specialist firms to carry out earth-continuity testing within the Board's area.

The methods of test and frequencies provide for the following items:—

(i) Provision of an accurate wiring diagram for each works.

(ii) Determination and comparison of the resistances of earth circuits, and corresponding power cores. This is to be carried out annually on earth-circuits for portable-equipment supplies, and at five-yearly intervals for all other earthing systems.

(iii) Determination annually of the total resistance of the final earth connection.

(iv) Testing of the leads by portable equipment at weekly intervals and at twice the full-load current of the appliance to which the lead is connected.

Fortunately, the accidents giving rise to safety regulations do not always involve injury to employees. This was exemplified by a Board employee who unwittingly discovered that a standard 220 volt single-phase, 15 amp., two-pin and earth plug would fit readily into a Reyrolle 440 volt, three-phase, three-pin socket outlet. Providentially the drill to which the plug was connected was lying on top of a purifier, so that the only first-aid measures required were replacement of fuses and an electric drill. Had someone been holding the drill, a fatality would have been almost certain.

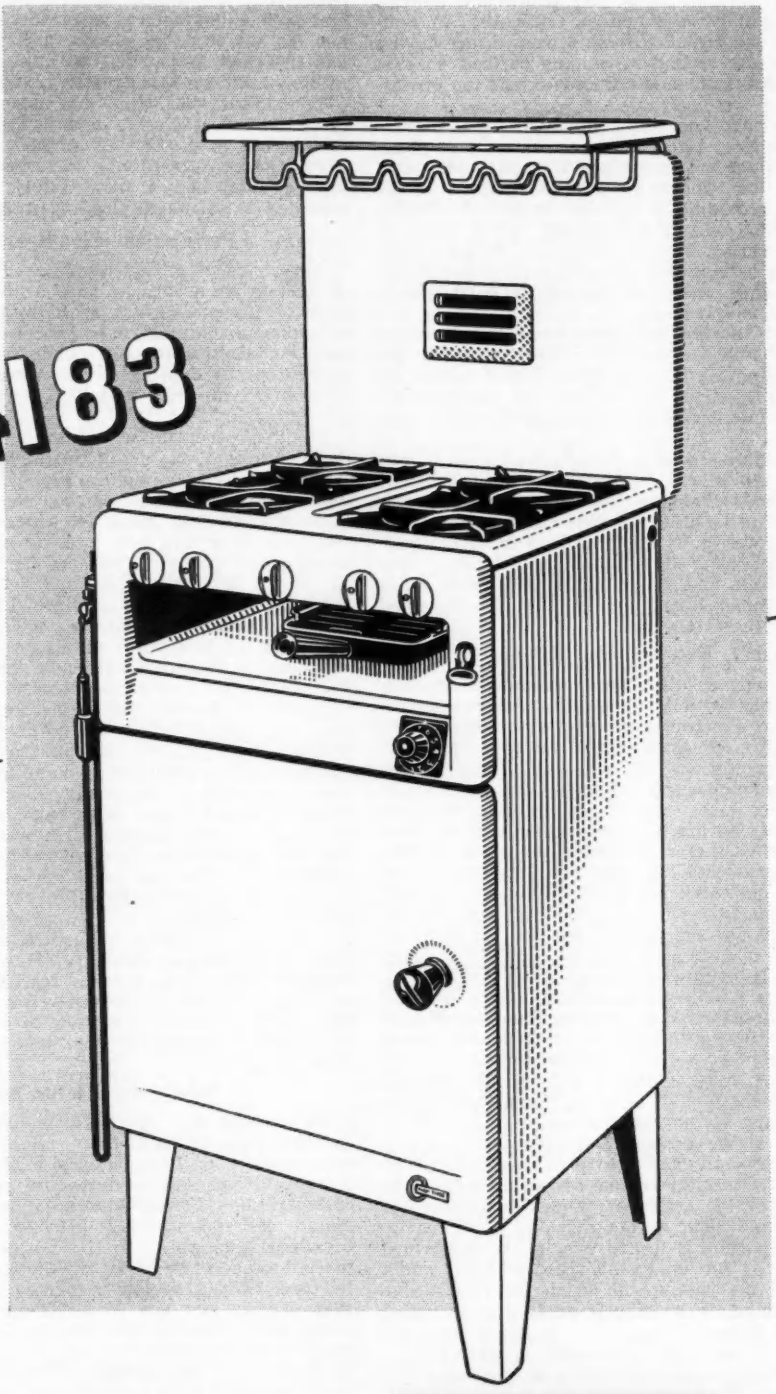
Appendix II to the Electrical Safety Regulations sets out in detail the various precautions to be taken for portable equipment. The following is a summary of the salient features:—

(i) Hand-held portable lighting will be operated at 25 volts or less.

ANOTHER STEP FORWARD

A worthy successor to the S.4180, of which over three quarters of a million have been sold in 5 years, the S.4183 has a much improved appearance and many desirable refinements. The more notable of them are full width oven door, forward venting oven flue, attractive hotplate and platerack design, and an entirely new external finish of textured vitreous enamel.

S.4183



The **NEW WORLD S.4183,** *like its predecessor, offers the keenest value for money in the low-priced cooker market.*

NEW WORLD

PRODUCT OF Radiation Ltd.

RADIATION GROUP SALES LTD., 7 STRATFORD PLACE, LONDON, W.1 TELEPHONE: MAYFAIR 6462

(ii) Hand-held portable tools and temporary lighting (not hand-held) will be operated at 110 volts. In both cases, the supply will be taken from a transformer having the mid-point of the secondary-winding earthed so that the maximum-shock voltage is reduced to half the operating voltage.

(iii) For three-phase portable equipment two alternatives are permissible. Either the use of a three-phase transformer to reduce the output-line voltage to 110 volts, or, alternatively, the equipment may be operated at the full-line voltage providing a suitable type of circuit-breaker is provided which is operated by a solenoid energised by any small leakage current in the earth-line. Safety in this case is dependent on continuity in the earth-line. In consequence, weekly testing of the earth-line in the trailing cable is specified.

Introduction of varying voltages as a safety measure is useless unless active steps are taken to prevent the possibility of equipment being plugged into a supply of the wrong voltage. Hence the Board has standardised a range of non-interchangeable plugs and sockets for various voltages.

It must be emphasised that Board Headquarters can only issue information and instructions. Reliance must be placed on the technicians on the job to see that appropriate steps are taken. A recent example concerned the failure of the stay-bolts in a cast-iron tar and liquor storage tank. Following this failure, instructions were issued that the bolts and stay-bars in all similar tanks in the East Midlands Board area should be inspected immediately, and thereafter yearly.

Compressors, Boosters, and Exhausters

It frequently happens that preventive measures can involve considerable expenditure—as, indeed, was shown by the failure of a compressor and a subsequent fire due to the unauthorised closure of a valve in the outlet main while the compressor was at work. Thought has been given to the implications of this problem. One of the major decisions taken was that all positive displacement gas compressors must be provided with a relief valve capable of passing the volume delivered by the machine on full load, and that such relief valves must be tested at weekly intervals. No relief valve normally supplied with a compressor will meet this stringent requirement. On all new machines being installed in the Lincolnshire Division of the East Midlands Gas Board, larger relief valves are being provided than those specified by the manufacturers. This requirement offers a good example of the need for careful design and installation to ensure safe working conditions. At first sight it would appear that this regulation could easily be met by providing the relief valve in the by-pass connection, but such an arrangement would, in most cases where compressors are running continuously, make it impossible to test satisfactorily at the prescribed interval.

The method I have adopted is to provide a relief valve of suitable size for each machine connected inside the main stop valve of the machine. The arrangement for testing then becomes that, as the machine is picked up or the stand-by machine is turned over at the prescribed weekly interval, it is run up to full speed with the outlet valve closed; and the pressure at which the relief valve operates is noted and observation is made that no undue rise in pressures occurs. Care must be taken that the machine is not run so long as to cause overheating.

A similar circumstance arises with exhausters. The opening or closing of an incorrect valve happens, unfortunately, all too frequently in gasworks operation. The closure of, for instance, a detarrer inlet valve before the by-pass valve is opened can have disastrous results on the exhauster unless a suitable seal is provided. Provision of a safety seal and its positioning require attention. On many works the main works safety seal is so positioned that, should it blow, it can give rise to serious consequences, either from gassing or fire risk. Frequently, facilities for re-flooding the seal are entirely overlooked. As a result of liaison with other gas boards, a prototype seal has been developed. The advantages claimed for this seal are that the gas outlet is sealed and can, therefore, be directed to a safe discharge point. The seal pot is reasonably self-sealing due to the fact that no loss of sealing medium occurs when the seal blows. One seal has, so far, been produced suitable for a small works and designed to pass 20,000 cu.ft. of gas per hour and to blow at 20 in. W.G. It has worked entirely satisfactorily.

To indicate the need for this precaution, a survey of the 26 manufacturing units in the Lincolnshire Division carried out in the last 12 months showed that only one works (which, incidentally, was largely reconstructed since vesting date) had a main safety seal which could be recorded as satisfactory in regard to position and safety.

Purification—Non-Sparking Tools

An explosive or inflammable substance and a source of ignition are needed to cause a fire or an explosion. In view of the precautions taken to prevent the formation of explosive mixtures, it has been suggested that no steps need be taken to remove sources of ignition. This is an entirely wrong approach. The possibility of error always exists. If both steps are taken, the risk of errors becomes almost negligible.

For this reason the use of non-sparking tools was introduced during 1949 for all operations where an explosion risk due to live gas might arise. Kits of tools comprising hammers, spanners, lifting wedges, etc., are available in each division for issue on loan to undertakings as required. The exclusive use of non-sparking tools for opening and emptying purifiers came into operation early in 1950. Originally, beryllium copper was used, but subsequently this was changed to Meigh metal, with the exception of shovels, which are made from duralumin. Difficulty is at present being experienced in obtaining a non-sparking blade which is strong enough for use with a compressor tool.

Special instructions for purifier operation were unnecessary, the subject being well covered by the I.G.E. code, which was adopted as the standard for the area.

Purification procedure is kept under constant review both at area level and locally. Some undertakings where unusual circumstances exist have adopted or are about to adopt inert-gas purging. The use of plugs in the boxes for venting under the layers is being introduced gradually.

Instructions for the operation of electro-detarrers, including the complete removal of gas with an inert medium before the admission of air, were issued before the official obligatory instructions. At most undertakings steam is used as the purging medium. However, at those undertakings where little or no deposits are found in the detarrer, the use of nitrogen is permitted. The instructions were recently re-written to include certificates of authority in connection with both detarrer and purifier operation.

Safety and Rescue Appliances

In view of the adverse comment on the 'Sparklet' (carbon dioxide) resuscitator, all appliances of the type were withdrawn from service in November, 1950. All manufacturing stations are now provided with either 'Novita' or 'Novox' resuscitation equipment and all major undertakings are provided with self-contained breathing apparatus. In the Lincolnshire Division compressed-air sets are used, on the grounds that they can be used with a minimum of training. Some maintain that oxygen sets are to be preferred; but it must be remembered that in the fire service and mines, where their use is universal, not only is weekly or daily training employed, but the conditions under which the sets are used are much more arduous than any likely to be experienced in the gas industry.

All stations are equipped with 'Antipoys' breathing masks, which are also provided on all mains and service handcarts and vehicles. Training of our own employees to carry out inspection of breathing and resuscitation equipment is as yet incomplete. To cover this interim phase, excellent co-operation has been obtained from the National Fire Service.

4. 'Code of Practice for the Safe Operation of Oxide Purifiers' (issued 1950 . Item P.1 of Safety Recommendations, issued by the Institution of Gas Engineers

* The E.M.G.B. has now published its own code, based on the above, entitled 'Rules and Procedure for the Safe Operation of Oxide Purifiers and Electro-detarrers.'

The need for careful design to ensure safety has been stressed. In this connection we are frequently unfair to the contractor. Given a free hand, the contractor is well able to provide safe access platforms, good staircases, etc. What has to be considered is that he is tendering in competition, and that too much 'gold plate' may lose him the contract. In our own interests and also the interests of the contractors, there should be a clear, precise specification of everything appertaining to safety.

DISCUSSION

Mr. **T. C. Battersby** (Watford, Chairman of the Gasworks Safety Rules Committee of the Institution of Gas Engineers) said they had, a great responsibility placed on them as employers. They had the human aspect in regard to the prevention of accidents and pain and loss of life, and they had to consider the need to prevent accidents because of the cost in loss of production and the heavy cost of compensation. Responsibility for the prevention of accidents was very clearly placed by law on the employers. They had the responsibility of seeing that where risks were involved care and skill was provided in the maintenance of plant and machinery, and that skilled people were charged with the duties of operating them and that they had been properly instructed.

The gas industry was a very old one and they had inherited a large number of systems and practices. Many systems today arose out of those old practices; but the development of scientific knowledge had led to the introduction of new processes, the extension of mechanisation, and the greater use of electricity on the works. It was unfortunately necessary to experience accidents before preventive measures were taken, but it would be regrettable if every works had to experience the same type of accident before the industry adopted safety recommendations. The Gasworks Safety Rules Committee had, therefore, been created and it sat regularly—in fact it was almost in continuous session—to deal with all reported accidents, and, if necessary, to make recommendations. The Institution had issued recommendations in the form of a loose-leaf binder; it was a fairly comprehensive issue covering a number of activities on the works and district.

Recently they had had to deal with electricity, and they were now revising the electricity rules. He thought the work that the East Midlands Gas Board was doing was complementary to that of the Safety Rules Committee. The use of electricity on gasworks had expanded, and in many cases they were substituting A.C. for D.C. The Electrical Inspectors of Factories were trying to emphasise the dangers of electricity on the works, and he was pleased to see that the East Midlands Board was giving due consideration to the risks involved. Mr. Ault had dealt in the main with the more serious type of accident which led to permanent injury or loss of life, but there were many minor accidents which accounted for much lost time and which could be quite expensive. He wondered whether they had been able to relate the incidence of accidents to a higher change-over of employment.

A statistical examination in the Watford Division had shown that with a total change-over of 106% at Luton they had 0.8% time lost by accident; at St. Albans, with a change-over of 66%, the time lost was 0.5%; at Watford the figures were 68% change-over and 0.3% time lost. It was no use a committee issuing a direction or a recommendation unless there was some way of ensuring that it was brought to the notice of the people on the works; and he thought much good might be done by way of showing films demonstrating the risks to which employees were exposed.

Joint Consultative Committees

In the Watford Division they reviewed accidents at their joint consultative committee, and each works engineer had an opportunity of having his attention directed to an accident and of examining his own works to see whether such risks could arise there. One great difference between the recommendations of the Gasworks Safety Rules Committee and the safety rules of the East Midlands Gas Board appeared to be that the former were recommendations, and were not mandatory, but in the case of the East Midlands Board they were given the force of a direction. He assured Mr. Ault that the paper would be welcomed as complementary to the work of the Safety Rules Committee.

Mr. **Ault** said this safety question involved a co-operative effort. There were four divisions in the East Midlands area, and most of the safety regulations stemmed from the engineering sub-committee under the Chairman and Chief Engineer. There was no doubt that the change-over of labour must accentuate their accident rate. It was important that everybody received proper instruction when he started on a job. All who served on the Gasworks Safety Rules Committee felt it an honour, and the fact of being in close touch with the safety question kept them on their toes. The East Midlands notices went out as instructions, but if a worker found them impracticable he should refer them back along the line so that those who issued them could have second thoughts.

The Importance of Adequate Earthing

Mr. **R. Hutchinson** (Leicester) said the subject of safety was not exciting or glamorous, but engineers would be the first to admit that 'to do it safely' was the first and most important aspect of an engineer's job. The old adage of doing for a shilling what everyone else would do for two was the second attribute of the profession. The development of the safety measures evolved by the East Midlands Board now made quite a formidable list; and although he had been an officer with the Board for the whole of the period under review, he was amazed at the wide variety and extent of the items that had now been covered.

Under the heading of electricity the author had referred to the safety instructions for electrical equipment and had recounted the salient features of a fatal accident, the outcome of using a portable handlamp which was operated at 250 volts A.C. It had been pointed out that the supply was fed from a 3-phase system, and by that was meant a 4-wire supply, one phase of which fed the handlamp, the 2-core trailing cable being connected to one line and the neutral. When the handlamp was dropped, and the contacts were short-circuited in the coal dust, the fuse in the neutral blew, since there were fuses in both line and neutral. The fact that the neutral fuse blew meant that thereafter there was no protection to the man who formed the link between the line and earth, and was thereby in the same position electrically as he would have been if he had been holding the line connection with one hand and the neutral with the other.

The outcome of the investigation which followed the accident was that all neutral fuses in the East Midlands Board installations must be replaced with solid links so that any similar recurrence would blow the fuse in the line and thereby eliminate the danger associated with a 2-fused feed.

An interesting sidelight to the edict issued regarding the replacement of fuses in neutral with solid links was met after instructions to a contractor had been given for the work to be done on behalf of the gas undertaking. The officer in charge of the contractors, presumably unaware of the current I.E.E. regulations relating to solid neutrals, was not personally in favour and went so far as to demur. Had the local gas manager not referred the matter back he might have been influenced by the misguided electrician in the belief that he ought to know. He (Mr. Hutchinson) threw this out as an example of the snares that could beset gas engineers who so often had to depend on the advice of contractors or officers of an electricity supply board for their electrical installations.

The point made in the paper regarding earthing was serious, since Regulation 13 of the Electrical Factories Acts called for earthing of all metallic parts, and failure to provide earth connection would constitute a breach of statute. Had the unfortunate accident been the outcome of an impaired earth connection, then, of course, there would have been a statutory breach in that instance. So far the East Midlands had excluded metallic handlamps in their regulations to simplify maintenance, since an all-insulated handlamp was readily available and was in every way satisfactory. He realised in passing that a flame-proof handlamp could not be made all-insulated, and that there were one or two other exceptions.

To test the leads of some of the portable equipment mentioned by the author, they had in his Division evolved a portable test set which would provide currents up to 50 amp. for that work, and he had brought a unit along to show to anyone interested. The testing of portable equipment leads was the only item not covered by the external specialists because of the necessity for weekly tests.

Indicating Safe Working Limits

Mr. **S. H. Stokes** (Scunthorpe) said that only on reflection did one realise how much influence the word 'safety' had on their daily lives. Without wishing to labour the point, he suggested a few additional instances which immediately sprang to mind: Clear marking of chain slings and wire rope lashings with substantial brass labels showing safe working limits; individual marking of every item of lifting tackle to facilitate inspection and repair; a carefully operated lifting tackle issue and return system; the use of individual danger boards by fitters, greasers, electricians, etc., all clearly marked to indicate the nature of the tradesmen concerned (this would avoid misunderstanding and accidental starting of machinery when several tradesmen were engaged on one job); the use of clear visual records for inspection of hand-held electric tools which should be checked for earth continuity at, say, weekly intervals; the use of stop buttons clearly marked and pin-pointed with coloured lights. An interesting variation of this on long conveyor systems was the use of a continuous trip wire

operated after the fashion of a bus conductor's bell cord and connected to suitable cut-out switches.

Other instances were: A firm means of egress from purifier boxes during emptying and filling which meant positively securing any ladder so that it was impossible for it to slip sideways on the cast iron coping); and the use of sliding deck plates over hot coke conveyors.

One was rather left wondering 'where we go from here.' After all, the workman still had an ego, and despite the assiduity with which one gave attention to these things he could quite easily fail to carry out advice and instruction. He recalled one recent incident when that happened, and the man paid the penalty with his life. The legal view, he believed, was that in such cases the employer and hence the management still bore the responsibility. There was much to be said for the American way so admirably illustrated in the recent Productivity Team Report: namely, that foremen were responsible not only for training of employees but also, by law, for the safety of all employees under their supervision, a point which illustrated a high degree of co-operation between the foreman and his men. There did not as yet seem much evidence of such co-operation in this country, particularly between management as representing the employer and the employee; on the other hand there was evidence that joint consultation was the platform on which the whole subject of safety could be ventilated, enabling them to reach an eventual solution to the problem, with physical benefit to the employee and tangible financial saving to one's board.

Detailing the Safety Programme

Mr. **E. H. Winch** (Cambridge) said he would like to endorse Mr. Ault's suggestions about the importance of detailing a safety programme and making it clear that everyone knew what he had to do. Intermittent operations involving hazards which perhaps only took place at intervals of years were sometimes complicated by the fact that, especially at the bigger works, there were often changes in staff; and it was important that records of those intermittent operations should be kept so that when there were staff changes all the benefits of past experience should be available. In one instance in the Cambridge Division they had introduced what they called a 'book of standing instructions.' He welcomed the idea of the clear numbering of valves so that one had a ready means of checking them.

Many potential dangers were easily overlooked and tended to be ignored, and these were not so easy to deal with. The most satisfactory way of dealing with them was not only to ensure accurate control of the process but to develop an accident consciousness in all groups of the personnel. At Cambridge they considered at their joint consultative committee the quarterly book of accidents published by the Ministry of Labour and National Service. They made a point of passing it round and discussing the various lessons which might be learned from the book.

Mr. **E. Williams** (Norwich) said Mr. Ault had asked them not to treat his paper as a guide to safety, but as a record of some of the work done by the East Midlands Board since vesting day. It might not be a complete guide to safety, but it was a most useful record of the various aspects of the subject; and because of its wide range it would provide a very handy document for reference purposes. In the Eastern area they had treated the subject with the same thoroughness and therefore there had been the need for regulations and instructions, but despite the welter of paper he had found that group and local officials did not consider these tiresome, and they were treated with the respect they deserved. The one possible exception occurred when the electricity regulations demanded the flame-proofing of equipment in, say, the engine room of a small works, where there was a gas engine with hot-tube ignition alongside, or even a Sigma calorimeter with an open flame bleeder burner.

In regard to bagging-off pressures, he agreed with the author's figures, which should be made general practice, but this had not always been the standard in the industry. Not many years ago he was thought 'windy' when he refused to agree to a scheme requiring the bagging-off of a 24-in. main at a washer outlet when even at reduced makes the pressure would have been 12 or 13 in. He had his own way, and H.P. connections were used as a complete shut-down was impracticable. Regarding the use of non-sparking tools in purifiers, like Mr. Ault he had experienced difficulty in obtaining a non-sparking blade strong enough to use with a compressed air tool. At Norwich a considerable amount of investigation had been made, and as a result he was pleased to say that, by altering the shape of the tool, using a cast-iron shank covered with Meigh metal, together with a C.D.S. pneumatic tool, the whole output costing under £30, they had already had over 150 working hours service.

His final comment concerned the use of CO_2 for resuscitation. His own experience was that the adverse report of the Medical Research Council against the use of CO_2 for first aid resuscitation was not widely known throughout the gas industry. In fact, the subject had been referred to the Gasworks Safety Rules Committee of the Institution. However, in the Norwich Division they had substituted oxygen for CO_2, using a comparatively inexpensive set made by Sparklets. This consisted of a cylinder valve, tubing, mouthpiece with expiratory valve. Used with an M120 Sparklet bulb filled with oxygen it provided an apparatus only a little heavier than the CO_2 Sparklet, and compared with the Novita set mentioned by the author.

Mr. **D. B. Parkinson** (Eastern Gas Board Headquarters) said that in view of the increasing use of electricity on gasworks it had been necessary in many of the smaller works to make only temporary arrangements until the plant could be brought up to the requirements of modern standards. The Technical Committee of the Eastern Gas Board had invited two senior inspectors to come and talk to them, and they had given the inspectors an assurance that in due time they would put in new plant up to standard. It would be a long job, but in the meantime they were doing all they could in the way of better ventilation and so on to improve the standard of safety. He asked Mr. Ault if he could give any figures relating to the cost of purging a gasholder with nitrogen.

The Author's Reply

Mr. **Ault,** replying to the discussion, said the engineer and the technical assistant on the works should realise that the electrician employed by the contractor or the supply authority did not necessarily know much more about electrical hazards than they knew themselves. He believed the Institution had recently finalised its electrical safety recommendations and clarified several points which had arisen locally. He was glad Mr. Stokes had raised the question of danger boards, and he would go further and urge that whichever tradesman put up the danger board should make sure that there was a system of passing the responsibility on to the next man on the job. His question about stop buttons was answered by the fact that in the Lincolnshire Division they insisted that all stop buttons must be illuminated with a blue light. Some accidents were due to ignorance, but others were due to bravado. He welcomed Mr. Winch's remarks about drawing-up detailed programmes. It was a good scheme, but in the East Midlands they had not got round to it yet.

With reference to Mr. Parkinson's remarks, many of the smallest works had had no electricity until comparatively recently, so they were starting from scratch in regard to safety. Two wrongs did not make one right, and anything put in now was based on modern requirements, although if a works was scheduled for closing down in the near future only such work as was necessary to minimise immediate danger was carried out. He wished to acknowledge the co-operation they received from the factory inspectors. Regarding the cost of nitrogen purging, roughly nitrogen was now about 55s. per 1,000 cu.ft., as compared with CO_2 at 40s. The total cost of the nitrogen for purging a holder was therefore around £30. Taking everything into account, he did not consider this was an excessive figure.

A vote of thanks was accorded to Mr. Ault on the proposition of **Mr. W. Morland Fox** (W. J. Jenkins & Co., Ltd.).

COAL PREPARATION PLANT

An order for a complete coal preparation plant to be put down at Maesteg, in South Wales, has been placed by the South Western Division of the National Coal Board with the Fraser & Chalmers Engineering Works, Erith (Kent), of the General Electric Co., Ltd. Operating as a central washery, it will serve four pits.

The plant will include a 12 ft. dia. 'Chance' cone for three-product separation. The plus 8 in. coal will be hand-cleaned, the 8 in. to 1½ in. coal will be washed in the 12 ft. cone, and the coal 1½ in. and smaller will be used for power station fuel.

Provision has been made for cleaning the 8 in. to $\frac{1}{16}$ in. coal in the 'Chance' cone at a later stage and installing froth-flotation plant to deal to deal with the coal $\frac{1}{16}$ in. and below. Input to the washery will be 250 tons per hour of raw coal, the cone having a capacity of 120 tons per hour of 8 in. to 1¼ in. coal.

Included in the contract are a steel-framed building to house the plant, conveyors, shaker screens, crushers, all electrical control gear, civil engineering work, lighting, power wiring, and heating.

Institution of Gas Engineers — Meetings of District Sections

London and Southern's Outstanding Session

The Spring Meeting of the London and Southern Section of the Institution of Gas Engineers was held at the Connaught Rooms, Great Queen Street, London, on May 18. Dr. J. Burns (Chief Engineer of the North Thames Gas Board and Chairman of the Section) presided.

The meeting was, as customary, preceded by a luncheon.

Mr. K. L. STOCK (Under Secretary, Gas Division, Ministry of Fuel and Power), in proposing the toast of 'The London and Southern Section of the Institution of Gas Engineers,' said the Institution as a whole, including, of course, the London and Southern Section, was near to the Ministry's heart. The gas industry's future would be very dim if the professional body of the industry was not flourishing. He had been somewhat dismayed to read in the Technical Press recently a statement to the effect that the Institution was to some extent 'gagged.' He found that hard to believe. Certainly it would be deplorable for the industry if it were true.

A Useful Contribution

He mentioned the point because he read the Technical Press with the greatest assiduity and felt that it made a very useful contribution to the work of the gas industry. He was convinced that those in the Ministry, the Gas Council, and in particular the members of the boards present would not in any way subscribe to anything but the thesis that the Institution should be absolutely free and that everybody should be able and willing to put into the affairs of the Institution everything that they felt able to put into it, and to benefit from a free and full exchange of ideas. It was *par excellence* the platform where the technical development of the industry could be promoted.

He wished the Institution the best of luck in the future. It seemed to him, as an amateur, that there was in fact a great deal of active technical development going on; and he had been interested to find that when he asked a large number of people who knew more about the technical situation in the industry, there was surprising unanimity in the reply, 'Yes, we do think that technical development is relatively more active today than probably it has been for a long time in the industry.' He thought that stemmed from the work which the members of the Institution of Gas Engineers were carrying out.

Closer Contact

By way of a final piece of provocation he would like to propose closer contact between the Southern Section and the Northern Section with a view to resolving the greater appreciation that appeared to him to exist in this part of the country for coke, with the greater appreciation which appeared to exist in the Northern part of the country of what could be done with bad coal!

Dr. BURNS, in response, said how honoured the London and Southern Section of the Institution was to have as its guests the leaders of the gas industry. They had with them representatives of the Gas Council, the Ministry of Fuel and Power, of the various gas boards, and of sections of the Institution. Naturally, they were pleased to welcome representatives of the parent body.

They had, continued Dr. Burns, almost completed a highly interesting session of the London and Southern Section. The session started-off with a discussion on staff—the selection and the training of staff for technical posts in the industry. They followed by a purely technical discussion on steam and power and another on the preparation of the raw material, coal, for the gas industry. Then came discussion on the commercial aspects of the industry. They appreciated clearly that, no matter how good they were technically, if what they made was not sold, there was really not much point in working.

The Technical Man's Position

This led him to ponder on the position of the technical man today compared with his position 40 or 50 years ago. He thought they could say that never in the history of the industry had the work of the technical man been so important as it was at present. Without technical development the industry would not survive the competition with which it was beset. At the same time they could say that never had the work of the technical man been so completely overshadowed by factors over which he had no control. The principal factor was the price and availability of coal.

He had referred to the paper on steam and power at a station in the North Thames Gas Board. This summarised a magnificent piece of technical work involving a considerable amount of capital. The outcome was a reduction in production cost of gas by about 0.2d. per therm. Overnight there might come from the Coal Board a price increase which would raise the price of gas ¼d. or ⅓d. a therm.

There had happened within the last few years something which was of fundamental importance to the gas industry—establishment of the coal price structure. The coal price structure had given them for the first time a means of comparing the relative values of coals to the industry. At the same time it laid down a differential in price between coal for the gas industry and coal for the electricity industry. It formulated for the first time officially and scientifically that the price per B.Th.U. of coal should be greater for the gas industry than for the electricity industry. That was likely to have a long-term effect on the gas industry. Unfortunately, during the last few months there had come along other increases in the price of coal which had destroyed the ratio which existed in the coal price structure between the price of coal for gas and the price of coal for electricity. Difficulties thus imposed would, however, act as an incentive to those in the gas industry to produce even better results. The industry would have no future unless there were technical developments, and that was why he had based his Chairman's Address on a technical subject—carburetted water gas. Finally, he took the opportunity of thanking the Chairman, Mr. Michael Milne-Watson, and the Deputy Chairman, Mr. F. M. Birks, and members of the North Thames Gas Board, with whom they lived and worked in great amity, for their support of the London and Southern Section of the Institution and of himself as Chairman during the past year.

The Guests

Mr. E. O. ROSE, B.SC., A.M.I.C.E. (Senior Vice-Chairman of the Section), in proposing the toast of 'The Guests,' said that the attendance at the present meeting was a record one. The Eastern Section of the Institution was holding its meeting in Skegness; and this prevented the Chairman of the Eastern Gas Board, Sir John Stephenson, from attending the London meeting, though he would have liked to have been present. It had also drawn away another old friend, Mr. J. S. Smith, of the Ministry of Fuel and Power. It was a great pleasure to welcome Sir Harold Smith and Mr. Henry Jones, Chairman and Deputy Chairman of the Gas Council. Sir Harold was, of course, a Past-President of the Association and was for many years its Secretary. It was the North Thames Area Board's day, and Dr. Burns was strongly supported by Mr. Michael Milne-Watson, the Chairman of the Board, and Mr. Birks, Deputy, together with all the members of that Board with the exception of Lord Verulam. A cordial welcome was also extended to Mrs. I. T. Barclay, Member of the N.T.G.B., the Chairman and Deputy Chairman of the South Eastern Board, the Deputy Chairmen of the Southern Board, and of the Eastern Board, together with friends from the Ministry of Fuel and Power.

The Section extended a particularly cordial welcome to Mr. J. T. Haynes, President of the Institution, who must surely have travelled a greater number of miles on the Institution's affairs than had ever been achieved in the past.

Mr. MICHAEL MILNE-WATSON, C.B.E. (Chairman, North Thames Gas Board), in a brief response, thanked Mr. Rose for his remarks. The London and Southern Section of the Institution was, he said, one for which he had a profound admiration.

Chairman's Address

Following the luncheon, Dr. BURNS delivered his Chairman's Address. This will be dealt with subsequently in the 'GAS JOURNAL.'

Mr. J. T. HAYNES, in proposing a vote of thanks to Dr. Burns, said that those who knew Dr. Burns and the characteristic way in which he dealt with emergencies during the war years, which resulted in his being awarded the high honour of the George Medal, would not be surprised that he had shown such a degree of ingenuity in the handling of the Section. He had departed from the usual practice adopted in an address of the kind by giving a technical paper; and he had done so hiding behind the privilege that the Address could not be discussed. Therefore, they were not able to discuss the paper, much as it deserves to be discussed. Dr. Burns had dealt with history and said that the first water gas set went in in London about 1891. He then remarked that the second set went in at Belfast; but he (Mr. Haynes) thought he was right in saying that the second set went in at Liverpool. And he believed that Liverpool was the

pioneer of the dry grate. For many years the former Gas Light and Coke Company was enabled, because of its size, to do a certain amount of research work far in advance of that possible in the large majority of undertakings, but the Gas Light was always ready to place at the disposal of its colleagues the results of its investigations. The whole gas industry owed a debt of gratitude to the Gas Light and Coke Company for the way in which it made possible the progress in the gasification of coke through the industry. Its successor, the North Thames Gas Board, had carried on that tradition. With men like Dr. Burns and those associated with him, they could rely on the quality as well as the quantity of investigation and research which the Board was carrying out, and look forward to the time when they would benefit materially from that work.

Mr. C. R. M. CROFT seconded the vote of thanks.

Eastern Section Meets at Skegness

With happy recollections of the five area staff conferences of the East Midlands Gas Board at Skegness the members of the Eastern section of the Institution of Gas Engineers serving in that area, with the cordial approval of their colleagues from the area of the Eastern Gas Board, chose that bracing East Coast resort for the fourth annual general meeting of the Section on May 17 and 18, under the Chairmanship of Mr. Bernard Clarke, M.B.E., J.P., Divisional General Manager of the East Midlands Board's Lincolnshire Division. It was Mr. Clarke's second term of office; he served his first term as President of the former Eastern Association of Gas Engineers and Managers in 1935. The meeting as usual was carried through with great success, on which congratulations are due particularly to the Chairman and particularly to the Hon. Secretary and Treasurer, Mr. J. Hunter-Rioch.

Official Luncheon

Mr. BERNARD CLARKE presided at the official luncheon, at which the principal guests were Mr. J. T. Haynes, President of the Institution of Gas Engineers, Councillor Mrs. E. Barratt, M.B.E., Chairman of the Skegness Urban District Council, and the Chairman of the East Midlands and Eastern Gas Boards (Mr. Sydney Smith, himself a member of the Section, and Sir John W. Stephenson).

Mr. SYDNEY SMITH proposed the toast of the Urban District Council of Skegness, and as he had proposed the same toast on three previous occasions, the last less than three weeks earlier in the same room, coupled with the same responder, there was little new for him to say. He recalled that when Mr. I. Cule, Clerk of the Council, had been invited to indicate any new developments worthy of mention on such an occasion he had cited two matters of much more concern to electricity than to gas, namely, the illuminations and the substitution of fluorescent lighting for old gas lamps in certain main thoroughfares. Nevertheless, he complimented the town on its increased attractions and he took the opportunity of praising the services of the Imperial Cafe as another example of what Skegness could offer to its visitors. Councillor Mrs. Barratt, whose name he coupled with the toast was, he said, a fine example of healthy living, and despite her support for electrical improvements she continued to cook by gas.

Mrs. BARRATT responded in a very humorous speech in which she recalled some of the incidents of her year of office which was due to end later in that week. She was extremely proud of Skegness, a town which, despite the fact that she was a Yorkshire lass and had made it the town of her adoption, had given her the honour of being the first woman chairman of the council. She was the only woman member out of a total of 18 councillors and had been well supported by good colleagues during her year of office.

Mr. W. A. EVETTS, Senior Vice-Chairman, who proposed the toast of the guests, said the hospitality of the Eastern Section was well known and there was a good deal of truth in the statement that the Section was one of the friendliest in the country. It was a special pleasure to welcome the chairmen of two area boards. Mr. Sydney Smith was a member of the Section. They also thanked Sir John Stephenson for coming along and for the interest he took in the doings of the Section; his presence gave him the opportunity of seeing some of the engineers of his own area whom he would probably see only infrequently in normal circumstances. The Section was also honoured by the presence of the President of the Institution; of Mr. J. S. Smith, of the Ministry of Fuel and Power; Mr. I. Cule, Clerk of the Skegness U.D.C.; Mr. C. C. Wood, Chairman of the Midland Section of the Institution; and Colonel J. Kennington, a President of the former Eastern Association. He also referred to the ladies, particularly Mrs. Bernard Clarke, the wife of the Chairman, and to Mr. J. Simpson, Chairman-Elect of the Society of British Gas Industries, whose activities were closely allied to those of the Institution.

Sir JOHN STEPHENSON, responding, said it was a great pleasure to be present in company with Mr. Sydney Smith, with whom he had worked intimately ever since he joined the Gas Council. One of their eternal worries was that they could never know everybody and become associated with them, and it was well that the Eastern Section provided such opportunities as it did for gas engineers in both the Eastern and East Midlands areas to live harmoniously and profitably together. He was glad also to be in the company of all the divisional general managers of the Eastern area.

Immeasurable Hope

He regarded the industry at present as being in an interesting transition stage, the outcome of which filled him with immeasurable hope. He believed they were entering a new phase, and whatever Skegness did with its lighting he was sure the Chairman of the Council would continue to cook by gas. He believed that scientifically we were on the verge of a new era, and that the plant manufacturers no less than the gas engineers were watching developments and progress towards the solution of those problems which seemed so immense. He believed that if we could maintain the high standard of the industry through the next few years we should emerge into a new era greater than the industry had ever seen. The possibilities were immeasurable. If there were any Jonahs in the industry he would urge them to get out of the boat at once. We wanted men of vision, men who were looking ahead, even though the clouds sometimes darkened our horizon.

Mr. J. T. HAYNES proposed the toast of the Eastern Section, which he described as one of the happiest in the whole set-up of the Institution. Anybody who visited the Eastern Section found himself among friends who recognised the value of mutual consultation. The team spirit which was so evident in the Section redounded to the advantage of the area boards whom they served, and the presence of Sir John Stephenson and Mr. Sydney Smith was an acknowledgment of what the area boards felt about the members of the Section.

That team spirit had had some very practical advantages. Some 15 months ago the little district of Mablethorpe was overwhelmed and its plight would have been serious indeed but for the assistance of its neighbours. Without the organisation of the area board and without the team spirit of the Eastern Section, Mablethorpe could not have recovered so rapidly and so thoroughly. It was greatly to the credit of the Board and the Section that Mablethorpe recovered itself with such tremendous and surprising celerity.

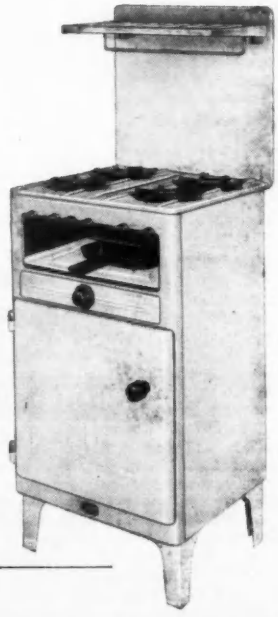
As President of the Institution and Chairman of the Benevolent Committee he wished to express appreciation of the very generous way in which the Section supported that Fund, and on behalf of those unfortunate members and their dependants who fell by the wayside to thank the members for doing their full share in coming to their assistance. The Section had a Benevolent Fund of its own, and he was glad to hear that there had been no call on the members' generosity during the past year.

He offered his congratulations to Mr. Evetts on having received the Institution Gold Medal—an honour not only to him personally but also to the Section. The Section was honoured in having Mr. Bernard Clarke as its Chairman. The enthusiasm and energy and spirit of progress which he showed were to be admired. Outside the industry, too, he was held in high esteem. He was for many years a Justice of the Peace at Stamford, and it was not long after his promotion to the position of Divisional General Manager at Lincoln that he was further honoured in being appointed a J.P. for the county.

Mr. BERNARD CLARKE, in reply, said they were conscious of the high compliment of receiving the President of the Institution. It was a compliment which should act as a stimulus to further effort and exertion. It was undeniable that the Section provided initiation into their technical life; it was a training ground for higher office, and the Institution itself would be of little avail but for the work and activity of the sections. The Eastern Section had provided distinguished and eminent men in the industry, and it appreciated the interest which the chairmen of the Eastern and East Midlands Boards took in its welfare. The Section had produced a number of Presidents of the Institution, and indeed the Chairman of the Gas Council himself was President of the old Eastern Association in 1929.

. . . the PARAGON pleases the Housewife

The clean lines, good looks and splendid cooking performance of the Paragon mean steady sales and satisfied customers



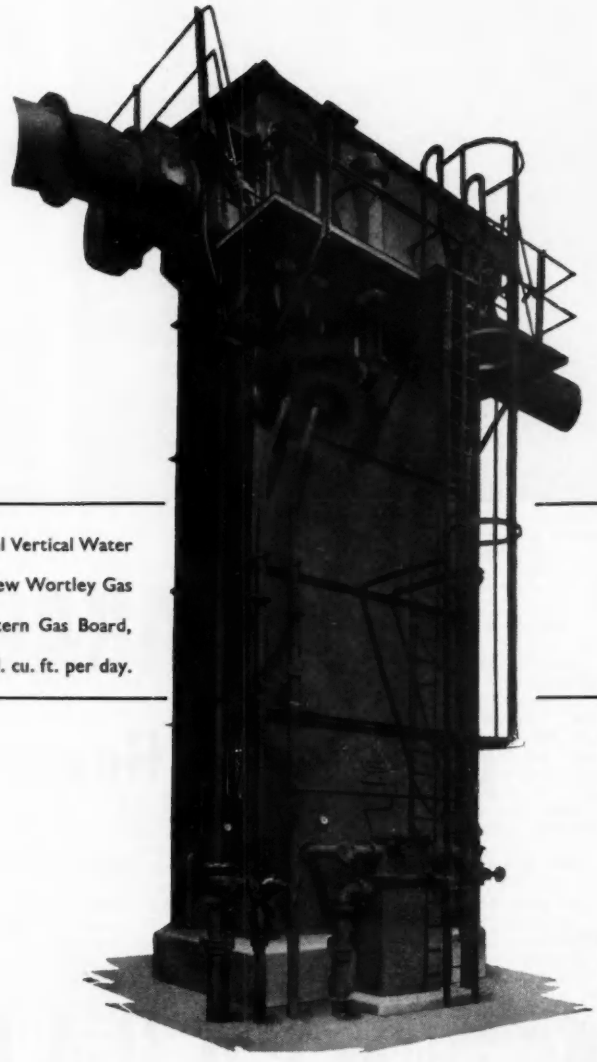
PARKINSON **PARAGON**

THE PARKINSON STOVE CO. LTD., STECHFORD, BIRMINGHAM, 33. *A Member of the Parkinson & Cowan Group*

TECHNICAL PROGRESS . . .

Modern gas condensing and washing plant is designed for high efficiency in operation and incorporates the latest technical advances. In recent years we have carried out numerous contracts of this nature, and our experience enables us confidently to invite enquiries for all sizes and types of Condensing Plant and Static Type Gas Scrubbers.

One of our recent developments is the Labyrinth type Condenser which is especially suitable for large capacities and embodies the inherent advantages of both horizontal and vertical types :-
Reduced cooling surface, Increased rate of heat transfer, Accessible tubes, High water velocity



Illustrated is one of three Mild Steel Vertical Water Tube Condensers installed at New Wortley Gas Works, Leeds, for the North Eastern Gas Board, each having a capacity of 3 mill. cu. ft. per day.

DE
DEMPSTER • ELLAND
1855-1954

ROBERT DEMPSTER & SONS LTD. ELLAND, YORKS.

LONDON OFFICE: 57, TUFTON STREET, WESTMINSTER, S.W.1.

COUNCILLOR Mrs. ELSA BARRATT, M.B.E., Chairman of the Skegness U.D.C., extended a civic welcome to the Section at the opening of the business meeting at the Imperial Cafe and expressed the hope that its deliberations would be to the benefit of the members and of the community whom they served.

Mr. J. HUNTER-RIOCH, Hon. Secretary and Treasurer, reported apologies for absence from Sir Harold Smith, Chairman of the Gas Council; Mr. Henry F. H. Jones, Deputy Chairman; Mr. J. Dyde and Mr. E. H. Harman, Deputy Chairmen of the Eastern and East Midlands Gas Boards respectively; Mr. Keith Stock, Under Secretary of the Ministry of Fuel and Power; and the chairmen and secretaries of the other Sections of the Institution.

Principal Visitors

Mr. BERNARD CLARKE welcomed the principal visitors, particularly Mr. Sydney Smith, Sir John Stephenson, Mr. J. T. Haynes, Mr. C. C. Wood, Mr. J. S. Smith, and Colonel J. Kennington.

The appointment of the following officers for 1954-55 was confirmed: Chairman, Mr. W. A. Evetts; Senior Vice-Chairman, Mr. J. H. Greenacre (Great Yarmouth); Junior Vice-Chairman, Mr. R. C. Wardell (Boston); Hon. Secretary and Treasurer, Mr. J. Hunter-Rioch; members of committee, Mr. J. T. Brookes and Mr. R. J. Gavin.

The annual report which was formally adopted recorded a total membership of 143, a net decrease of three on the year.

Mr. HUNTER-RIOCH presented the accounts and appealed to members for increased support on behalf of the Benevolent Fund, particularly by way of covenanted subscriptions whereby the Fund derived the benefit of income tax relief.

Mr. W. A. Evetts was elected District Member of the Council of the Institution, and Messrs. A. W. Mather and H. H. Redwood were re-elected auditors.

Mr. HAYNES said he brought the greetings of the Council of the Institution and their colleagues in the industry. He congratulated Mr. Clarke on his election as Chairman of the Section and the fine way in which he had conducted the meetings during the year. He observed that in the official title of the Section they used the words 'Incorporating the Eastern Association of Gas Engineers and Managers,' which failed to convey a clear impression of the mature age of the organisation which started away back in 1888 as the Eastern Counties Association. He welcomed Mr. Evetts as Chairman-elect and as District Member of the Institution Council.

Chairman's Address

Mr. CLARKE then delivered his Chairman's Address (see pages 501-503).

Mr. H. S. CHEETHAM proposed a vote of thanks to the Chairman, not only for his address, but for all that he had done for the Section during his year of office. They were singularly fortunate in having had him as Chairman of an organisation over which he presided so successfully in 1935. He had known Mr. Clarke for some 30 years; in fact he was one of his earliest friends in the gas industry, not entirely unconnected in the early days with water gas plant. In his Address, Mr. Clarke had pointed out a number of important signposts to the future of the gas industry, and it was gratifying to hear from one with such wide experience that he had such great confidence in the future. He had mentioned some essentials that were well worth quoting—confidence in our leaders, loyalty to our colleagues, attracting the right men to the industry and educating them in the right way, and the furtherance of research and development. In regard to recruitment one heard a good deal in these days about the right men not coming into the industry; they appeared to feel that electricity and atomic energy were the spheres of the future. He had been privileged recently to hear Sir Christopher Hinton, who was interested in the industrial side of atomic energy, give an address in which he pointed out that on account of the very high capital cost of plant he did not see any possibility of the price of electricity resulting from the use of atomic energy competing with the present price of any other fuel.

In regard to research and development, the industry was in difficulties over coal supplies, and those on his side of the gas industry—the development and construction of plant—were working side by side with the Gas Council Research Committee in trying to develop new processes which would enable them to use coals not now in general use in the gas industry, as well as to use heavy oils. So far as heavy oil was concerned there were indications that the price was going to be reduced in the future. He believed that semi-caking and non-caking coals as well as heavy oils would make a big contribution to gas manufacture in the future.

They appreciated the work Mr. Clarke had done and the service he had given not only to the Eastern Section but to the gas industry as a whole.

Coal Price Contrast

Mr. R. A. WESTON (Norwich) said there were two good reasons why he should second the vote of thanks—first because he had known Mr. Clarke for a very long time—and secondly because he had himself had the experience of preparing a Chairman's Address and realised the amount of work it involved. While it was not the practice to discuss a Chairman's Address he felt there were some passages worthy of emphasis. One point was that Mr. Clarke's position was similar to his own in that it covered an area of 2,700 sq. miles against his own 2,200, with very few major undertakings and a number of small ones which were not easy to run. He envied him his coal at 84s., which was 13s. lower than in his own division. He believed they were paying the highest price in the whole country. He also envied him his availability of coke oven gas. The whole address reflected the character of the Chairman. It was factual and sincere, and while he had his feet on the ground his head was not in the clouds. It was an address that would repay the closest study.

He was pleased to notice his reference to district and local managers. Their task was not an easy one. There were several of them present at that meeting, and he could say that they realised their value. In the country town it was the local manager who personified the gas board, and he thought that as a body they deserved the fullest support that the higher executives could give them. Mr. Clarke's study of district development was interesting and showed how far they still had to go—and it was a long way. They must not try to sell appliances to people who did not want them; their aim should be to make them want to buy them.

The vote of thanks was carried with acclamation and briefly acknowledged by the CHAIRMAN.

When business was resumed on the Tuesday morning the CHAIRMAN referred with sorrow to the death of Mr. A. F. Topley, Director of the Woodall-Duckham Construction Co., Ltd., a member of the Section.

On the proposition of the CHAIRMAN, seconded by Mr. EVETTS, it was agreed to make the usual donation of £30 to the Benevolent Fund of the Institution of Gas Engineers. Mr. Clarke said the Section had two beneficiaries under the scheme, one the widow of a former President who was in one of the homes, and the other the widow of a member who was receiving a grant.

Two new members were elected on the recommendation of the Management Committee—Mr. George Davies, Sales and Service Manager of the Lincolnshire Division, and Mr. H. J. Felgate, London Manager of Gibbons Brothers, Ltd.

The CHAIRMAN then introduced Mr. D. W. Ault, Divisional Engineer, Lincolnshire Division, to present his paper on 'The Development of Safety Measures in the East Midlands Gas Board.'

A vote of thanks was accorded to Mr. Ault on the proposition of Mr. W. MORLAND FOX.

Mr. CLARKE then introduced Mr. Evetts as the new Chairman of the Section. The appointment, he said, was a distinction and compliment which Mr. Evetts well merited. His contribution to the industry was of great importance and he reflected honour on the Section last year when he was the recipient of the Institution Gold Medal. He had not been in the Section for a great length of time, having joined in 1949.

Mr. EVETTS briefly acknowledged the compliment and took the opportunity of thanking Mr. Clarke for his services during the past year.

Mr. CLARKE, responding, said no one could fill the office satisfactorily without the loyal co-operation of the Hon. Secretary and Treasurer and the members of the Section, and he thanked Mr. Hunter-Rioch for his services.

Mr. J. HUNTER RIOCH said one could only do the job with the co-operation of the Chairman, and Mr. Clarke had been no exception. He had been most helpful. The members of the committee were also most co-operative; he also wished to thank his assistants, Mr. L. Coulson and Mr. W. H. Wosencroft, who had been a tower of strength in the carrying out of the many duties which fell to the lot of a secretary. Finally, he thanked Mr. R. J. Gavin for his help in organising the bowls competition, and the Technical Press for their faithful recording of the proceedings.

The Lighter Side

The annual golf competition was played over the course of the North Shore Golf Club on the Monday morning, and at the same time the bowls competition was played on the South Parade municipal greens. The trophies were presented to the winners by Mrs. Bernard Clarke at the reception held in the evening at the Sun Castle, when members were received by Councillor Mrs. Barratt and Mr. and Mrs. Clarke. Dancing, a cabaret show, and refreshments combined to make the evening as enjoyable as usual.

The golf winners were:

Turner Trophy: S. E. Balsom (84—15=69). George Wright Cup: J. Simpson (78 scratch); 1st prize: S. E. Stokes (88—15=73); 2nd prize: W. Morland Fox (87—12=75); 3rd prize (tie): J. S. Marshall (90—14=76); and R. C.

Wardell (86—10=76); visitors' prize: J. S. Smith; Prize for most tens; D. W. Ault.

Bowls competition results were:

First prize (Derrick Wilson Cup): F. A. Rhead (28 shots); Fred Wilson Cup: H. Alcock (28 shots); 2nd prize: W. A. Evetts and D. B. Parkinson (27 shots); 3rd prize: R. J. Gavin and S. Francis (25 shots); 4th prize: L. C. B. Williams and W. White (22 shots).

During the technical session on the Tuesday morning the ladies were the guests of Mrs. Bernard Clarke at coffee in the lounge of the Seacroft Hotel.

South Western Section Meets at Taunton

The South Western Section of the Institution of Gas Engineers met at the Gas Board Offices, 34, Bridge Street, Taunton, on May 19. The Chairman, Mr. Charles R. Ingham, M.INST.GAS E. (Bristol), presided over a large attendance.

Mr. T. L. Tallentire (Cheltenham), formerly Sub-Divisional Manager of the South Cornwall Sub-Division, presented a paper on 'Reconstruction in the Extreme South West.'

Mr. J. T. Haynes, President of the Institution, wrote regretting that pressure of business in Bournemouth made it impossible for him to be present. He hoped he might be able to attend one of the Section meetings during the year, although it would not be as President. He wished Mr. Ingham a very happy year in the chair. Mr. C. H. Chester (Chairman of the South Western Gas Board) also wrote apologising for unavoidable absence.

The CHAIRMAN welcomed Councillor A. W. Loveys, of Taunton (a member of the Board and chairman of the South Western Gas Consultative Council), who, he said, had done a very fine job on the Council.

Mr. Loveys, replying, said that everyone whom he had met in the gas industry had been ready to assist him since he took over his present office, for which he was very grateful.

The CHAIRMAN announced the election of two new members—Mr. A. V. G. Smallridge (Exeter) and Mr. J. B. Friggens, of the Woodall-Duckham Co. The latter was present and received a welcome from the Chairman.

Election of Officers

Officers for the ensuing year were announced as follows: *Chairman*, Mr. W. B. Claridge (Swindon); *Senior Vice-Chairman*, Mr. J. W. Dean (Plymouth); *Junior Vice-Chairman*, Mr. T. L. Tallentire (Cheltenham).

Mr. C. P. Bateman (Bath) and Mr. K. G. Bodiley (Weston-super-Mare) automatically retire from the Management Committee. Nominations were invited, and vacancies will be filled at the annual general meeting in October.

Following Mr. Tallentire's paper, a film was shown of Cornwall, including the home of William Murdoch (who discovered gas in 1792) and copious illustrations of the reconstruction works.

The CHAIRMAN expressed appreciation of the film and congratulated the amateur photographers on their fine achievement, 'a labour of love.' Mr. Ingham said that Mr. Tallentire's paper was the account of a man who had a very difficult, heart-breaking, discouraging job to do. 'I think it is an account of achievement of courage in adversity, and something on which Mr. Tallentire will be able to look back in future years with great satisfaction,' he added.

Mr. J. W. DENTON (Torquay) added a tribute to Mr. Tallentire. He said he presented the paper in a concise and clear way—and very modestly. The film disclosed the difficulties experienced, and the photographers were to be congratulated as amateurs not only in making a very clever approach to what they had to show, but on showing it in a technical way so that the engineers could appreciate some of the problems. The West, in having South Cornwall in its area, was confronted with one of the greatest difficulties of any area board. If the gas industry had not been nationalised the gas situation in the South West would have been in a very sorry state.

'I think the main feature of reconstruction in South Cornwall has been the grasping of the nettle,' he continued. 'There, I think, our Chairman made the very wisest move that has been made in determining that it was no good carrying out integration unless we repaired the low pressure supplies. He realised it was no good compromising about that and fiddling about with this consumer and that consumer, and that the cheapest way was to say, 'Let us get at a group, a town, a street—everything in a row.' The mobile reconstruction team working down there had paid the biggest dividends.

Answering a question about the increasing demand for cookers and other gas appliances in South Cornwall, Mr. Tallentire said it was not at first easy to convince the people of Hayle that the integration scheme was worth while; they had looked upon gas as a very mediocre method of providing heating for cooking equipment. Although figures were not finalised when he left Cornwall, the number of consumers was certainly rising.

A Pattern for Other Areas

Mr. T. W. JACKSON (Taunton) said the survey in Cornwall became a pattern for other areas. One expected to have a lot of trouble there with Cornish granite and the integration and main laying difficulties were tremendous. Virtually they had to start there from scratch.

Mr. T. N. DENT (Bristol), proposing thanks to Mr. Tallentire, said his whole team must have been enthusiasts; their task almost beggared description. The film was unique: he thought it was the first time he had seen a film showing the beginning of things. Although made by amateurs, it was beautifully arranged. 'It may find a fitting place in the archives of the Institution, so that we and the younger generation can look back upon it and see what had to be done to lay the foundations of the new gas industry. After all, the gas industry is new: it is being re-born once again.'

Mr. TALLENTIRE, replying, said there were present that afternoon many of his colleagues and friends who made the work and the film possible. 'I want to pass on to them my thanks and congratulations; they are men of sterling quality who, long before I went to Cornwall, were keeping the flag flying. I, too, saw the film today for the first time. To the photographers who made it—and they have made history—I want to say a special word of thanks.' He congratulated all the staff and employees in any way concerned with the work.

The CHAIRMAN proposed and Mr. W. B. CLARIDGE seconded a vote of thanks to Mr. T. W. Jackson and his divisional staff for allowing the members to see their works and distribution shops and also for the excellent arrangements for luncheon and tea.

Our reports of the meetings of the Midland Section, on May 14, and the North of England Section on May 7, are held over until a later issue.

Runners in Hot Water

Eleven hundred cross-country runners, including Britain's 'White Hope' for the Olympics, Gordon Pirie, got into hot water at Birkenhead recently—thanks to gas. They were competing in the national cross-country championships run at Birkenhead's Arrowe Park, where Gordon Pirie defended his title.

Only 10 days before the meeting the organisers decided to try to improve bathing facilities for the contestants and approached the Wirral Group of the North Western Gas Board, the Corporation Cleansing Department, and the National Fire Service to see whether anything could be done. As a result of this 'joint consultation' the 5,000 gall. of hot water needed for 1,100 baths were drawn off at a temperature of 180°F. from the condensers at Birkenhead gasworks, carried 2½ miles by the cleansing department to a school yard near the course, and there fed into temporary canvas 'ablutions' erected by the N.F.S. ready for the crowd of leg-weary athletes.

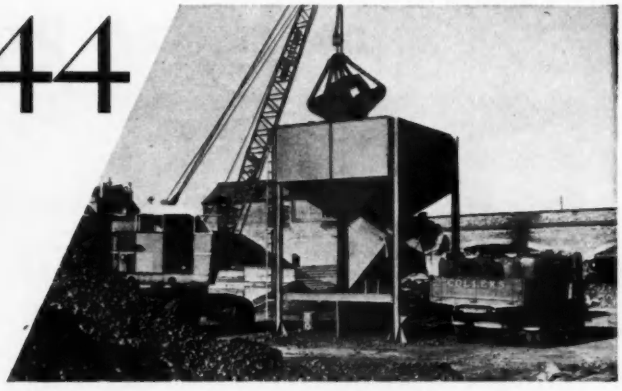
Clayton Sports Association

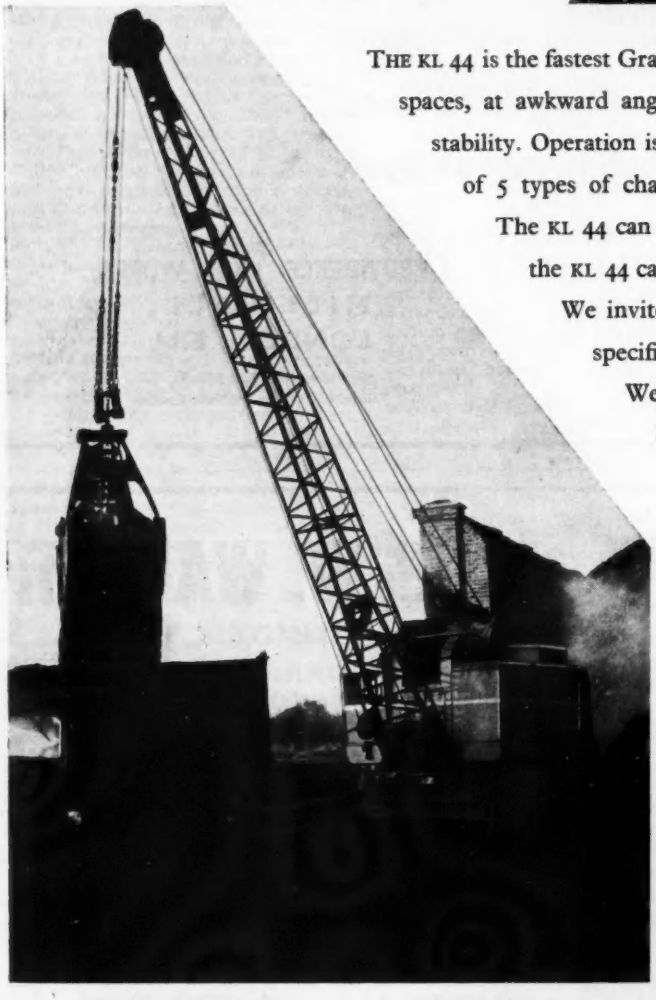
The 34th annual general meeting of the Clayton and Allied Firms Sports Association was held on May 12, the chair being taken by the Chairman of Clayton, Son & Co., Ltd., Mr. S. Cawthorne. The Secretary and Treasurer, Mr. J. Rathmell, reported a satisfactory financial year although a slight loss had been incurred due to the purchase of additional ground equipment.

Sectional reports showed that the football section had had a very successful, if rather disapointing season, as the football team had finished the season runners-up in the League Championship and also the Cup Competition. The cricket section had started the new season well with successive victories, and the children's entertainment section, after entertaining about 300 children at one of the principal pantomimes at Christmas, was now making arrangements for a field day to be held on July 10. The angling and golf sections reported steady progress, and the membership of the swimming section had considerably increased, being now in the region of 150.

In response to a vote of thanks to the Chairman, proposed by Mr. C. Brass (Vice-president), Mr. Cawthorne assured the members of his and his co-directors' continued support and interest.

Why the KL44 excels at coal handling





THE KL 44 is the fastest Grabbing Crane in the world. It will work in confined spaces, at awkward angles, and on difficult terrain. It has exceptional stability. Operation is rapid, precise and controlled. There is a choice of 5 types of chassis, and a variety of jibs, from 24-ft. to 50-ft. The KL 44 can be used with 3 different types of grab. In short, the KL 44 can be matched to the job with conspicuous success. We invite you to compare the KL 44 — on price/capacity, specification, design, engineering and after-sales service. We shall be delighted to send you fullest details.

EARLY DELIVERY. HIRE PURCHASE TERMS ARRANGED.

Illustrations show a KL44, feeding hopper and truck straight from stockpile. A different type unloads a rail wagon.

JONES KL44 MOBILE CRANES

JONES Cranes are made in the following sizes:-
KL 15 for loads up to 15-cwt.
KL 22 for loads up to 2 tons.
KL 44 for loads up to 4 tons.
KL 66 for loads up to 6 tons.
KL 100 Rail Crane — for loads up to 6 tons. Will shunt 200 tons.

Distributed in the United Kingdom by:

GEORGE COHEN SONS & COMPANY LTD. Wood Lane, London W12

Designed, manufactured and exported by their Associates:

K & L STEELFOUNDERS & ENGINEERS LTD. LETCHWORTH, HERTS.

THE 600 GROUP OF COMPANIES

54/1107

SAML. CUTLER & SONS LTD.

Specialists in all types of Gasworks plant and Steel Constructional work

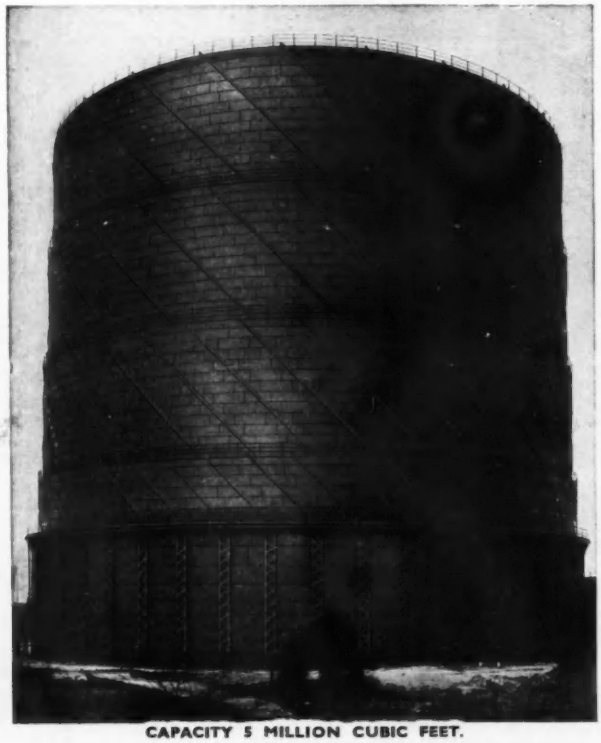
70, VICTORIA STREET, WESTMINSTER, LONDON, S.W.1.

Telephone : Tate Gallery 9592.
Telegrams : Retortus, Sowest, London.

PROVIDENCE IRON WORKS, MILLWALL, LONDON, E.14.

Telephone : East 5231-2.
Telegrams : Cutler, Millwall, London.

14



CAPACITY 5 MILLION CUBIC FEET.

C. & W. WALKER

LIMITED,

DONNINGTON, Nr. WELLINGTON—SHROPSHIRE

'Phone : Wellington-Shropshire 12
'Gram : "Fortress," Donnington-Shropshire.

SPIRAL GASHOLDERS

DESIGN by Specialists.

MATERIALS of Best Quality.

CONSTRUCTION in our own Works, by Trained Workmen, Under Efficient Supervision.

ERECTION by Experienced Erectors.

Riveted or electrically welded.

LONDON OFFICE : 70, VICTORIA STREET, S.W.1. 'Phone : Victoria 5842. 'Grams : "Fortress," Sowest, London.

British Gas Staff Association

As briefly reported in the 'JOURNAL' last week, the 1954 conference of the British Gas Staff Association was held on May 14 and 15 at Bournemouth under the chairmanship of Mr. W. E. Webb, J.P. At a civic reception at the Town Hall, Mr. A. R. MCBAIN, Chairman of the Southern Gas Board, said he was pleased to welcome the B.G.S.A. to the Southern Area. He had not a long experience of the industry or the Association, but he had great faith in the gas industry and, from information he had received, felt that all must be grateful to the men who had originally formed the B.G.S.A. He, himself, could claim to be a pioneer in the growth of negotiating and consultative machinery as he took a very considerable part in the institution of Whitley Councils in the Civil Service. He therefore had a good deal of knowledge and sympathetic understanding of the activities of Staff Associations. Mr. McBain believed in full consultation and that the B.G.S.A. members could make a great contribution to efficiency and productivity through the consultative committees.

Mr. F. C. HENFREY-SMITH, General Secretary, introducing the annual report, said that the index of retail prices had been steady during the year but the staff side of the National Joint Council had urged upon the employers' side the need to restore the purchasing power of staffs, as compared with 1948, and to restore differentials which had been worsened since vesting date. He pointed out that, whereas juniors at age 16 had received increases amounting to 29% since 1950, staffs in the top grade had had only 15%. The B.G.S.A. therefore intended again to endeavour to secure an examination of, and such amendments to the salary structure as will go some way towards a restoration of the general position.

Question of Unity

Mr. Henfrey-Smith asked the conference to consider the question of unity of gas staffs in trade union organisation. The B.G.S.A. had been asked to discuss an amalgamation with the National and Local Government Officers' Association but the National Council of the B.G.S.A. had not accepted the invitation as it was clear that such an amalgamation would entail a loss of autonomy. Much as all gas staffs would like to be united in one organisation, the B.G.S.A. Executive considered that the form of organisation was of equal importance. They believed that a real spirit of unity for service to the public could only be engendered by an industrial union concerned with the one industry.

Mr. H. J. ARNOLD, National Organiser, said that although expansion of the B.G.S.A. had now slowed, loyalty and interest had developed considerably. Members of outstanding ability as branch organisers, as negotiators, and on consultative committees were always being found and the Association was therefore still able to rely confidently on its laymen for carrying out the greater part of its work at branch or undertaking level. The appointment of an additional organiser, Mr. L. H. Tune, of Birmingham, would enable greater attention to be paid to organisational matters and for the problems of members to be settled even more speedily. The B.G.S.A. itself was united and in due time Mr. Arnold hoped that all gas staffs would be united.

The President of the Institution addresses the B.G.S.A. conference. Also on the platform are J. Lilly (Solicitor), W. E. Webb (Chairman), C. C. Holt (Vice-Chairman), F. C. Henfrey-Smith (General Secretary), and H. J. Arnold (National Organiser).

Discussion on the annual report turned mainly on the offer of an amalgamation with N.A.L.G.O. All were agreed that solidarity of gas staffs was necessary to smooth and satisfactory negotiations of conditions of service but it was stated with even greater force that the autonomy of gas staffs in their own organisation must be preserved. The National Council's action in rejecting the amalgamation proposals was confirmed and instructions were given on any other amalgamation proposals which might be received.

After dealing with finance the conference turned its attention to the 70 motions submitted by the National Executive and the branches.

Employee Representation

The conference applauded the calling of the conference of the Gas Council, area boards and trade union representatives to discuss the efficiency of the industry. It emphasised, however, its view that while consultation may assist in the improvement of efficiency, employee representation on the boards is essential if the maximum benefit for consumers is to be achieved. The conference instructed the executive to continue to press vigorously for employee representation on all gas boards.

An emergency resolution on coal prices was carried unanimously after it had been moved vigorously by the Gaslight Western Branch. It read, 'That this conference views with greatest alarm the latest price increases imposed upon the gas industry by the National Coal Board, particularly when the price weighting against the industry has been increased disproportionately to that for the British Electricity Authority, even taking into consideration the different heat values in the coal supplied.'

The conference reiterated the need for a national fuel policy to secure the best use for the diminishing coal of the country and urged the Government to take more effective action against air pollution.

The work of the Consumers' Consultative Committees was acknowledged but concern was expressed that, in one or two cases, they appeared to have departed from their prescribed functions under the Gas Act. These committees should not be allowed to influence the negotiation of conditions of service of employees or to intervene in arrangements between the boards and their staff, said the conference.

The opinion was expressed that certain Joint Staff Consultative Committees are not developing satisfactorily, mainly because management and staff are not making the full use of these meetings intended by the Gas Act. Further consideration would be given to improving these committees. To foster interest in the work of the industry locally, it was urged that an annual financial statement for each group or division in each area should be made available for inspection by employees. The local trade union representatives should be consulted by the management when changes in systems and other re-organisations are contemplated, said the conference, so that the staff may assist in avoiding unnecessary difficulties. A simplification of methods was also demanded in the interest of greater efficiency and the conference deplored the tendency for a constant increase in costly returns and statistics.

After debating the future policy of the Association on such matters as membership, publicity, and its Journal *Thermfare*, the conference spent the whole of the second day in discussing conditions of service.

Conditions of Service

The conference overwhelmingly defeated a reiterated demand that any future salary increase claims should be on a flat rate basis but expressed its objection to previous refusals of the Gas Council to make agreed salary increases retrospective to the date of the claims.

The conference unanimously agreed that the time was now opportune to review the gas industry's national salary structure as it considered that the low salaries now being offered for vacant positions gave little or no attractions for new entrants of the correct type. The executive was instructed to use all means at its disposal 'to combat the present propensity of the boards to subtract something from each job as it becomes vacant and to use this as an excuse to down-grade the position.'

The present overtime bonus scheme for staffs was severely criticised, especially by the technical and supervisory staff. A new agreement was demanded which was related to the 38 hour week for all staff and which clarified the alleged inclusion of 'notional payments' in some salaries to cover all overtime.

At the conclusion of the conference Mr. W. E. Webb J.P., and Mr. C. C. Holt were re-elected Chairman and Vice-Chairman.

LONDON JUNIORS SEE CIMENT FONDU PROCESS

Posing for this picture before re-embarking for their return trip to Westminster is the party of London Juniors which had just toured the Ciment Fondu works. The President, Mr. W. Johnson, is seated seventh from right, second row back.

Sixty members of the London and Southern Junior Gas Association were among the few people in the London area to be cool on May 13—climax of a recent heat wave. They were the guests of Lafarge Aluminous Cement Co., Ltd., makers of Ciment Fondu, who organised a Thames pleasure launch to take the party from Westminster Pier down river to the works at West Thurrock.

A cool, if smoke-laden, breeze was fanned by the smart, fast launch, and as the guests watched the preparations for the Queen's homecoming along the Thames banks, they were served with refreshments at tables on the upper deck and entertained by the Lafarge representatives.

Shortly after lunch in the saloon, the boat moored at the Company's own wharf, where a mobile crane towered overhead. Clambering ashore with nautical efficiency the guests found a special train of the works railway system waiting to take them to the centre of the works. There, they divided into five groups and were provided with white-coated escorts.

Before the departments were visited, the party saw a loaded lorry weighing nearly 23 tons drive ponderously on to a 7 in. thick piece of Ciment Fondu concrete laid only seven hours before.

After this impressive display each group toured the works. In the laboratories they saw a little of the rigorous control, both chemical and physical, that is exercised at all stages of manufacture to ensure that the finished Ciment Fondu complies with the standard specification. Technical service and research work are also carried out in the laboratories.

What surprised those who had seen other cement works was the high standard of cleanliness. The approaches and concreted parts of the works were clean and inter-patterned with smooth lawns. The workers' canteen was no less bright and fresh than the locker rooms and wash-houses, where the party washed at imitation marble fountains —Ciment Fondu products.

The principal raw materials concerned in the manufacture of aluminous cement are bauxite and limestone and, to fire the furnaces, coal is used in its pulverised form. Though the limestone is available in this country, bauxite has to be imported. Crude bauxite, which arrives as a mixture of large pieces and fine material, is subjected to a crushing and screening process which produces prepared 'lumps' and 'fines.' The lumps, which range in size from 1 in. to 5 in., are suitable for charging direct to the furnaces, but the fines, ranging from ¼ in. down to dust, have to be mixed with small quantities of cement and water and processed into briquettes before they can be charged to the furnaces.

Limestone is delivered in prepared lumps so no processing is required. Dry cleaned small coal is used and, after being pulverised in a central grinding plant, is fed pneumatically to the furnaces for firing. All these raw materials and the intermediate products are stored in a single storage shed. This building is served by a high-speed 12-ton electric overhead travelling crane, capable of handling materials at the rate of over 200 tons an hour.

The prepared materials are fed to an automatic weighing plant which discharges them into a skip of an automatic telpher serving the furnaces. The furnaces are a combination of cupola and open hearth furnaces. The molten material is solidified, cooled in a rotary cooler and broken down into small pieces. Grinding the 'clinker' into Ciment Fondu is done in rotating combination tube mills. Each compartment is charged with steel balls which, by their tumbling action as the mill rotates, crush the clinker down to the fine powder known as aluminous cement. Owing to the extreme hardness of the clinker, the wear and tear and consumption of grinding media is very much greater than with Portland cement.

Photographs were taken on a lawn, and Mr. C. C. Moore, Works Manager, took the opportunity to tell the Juniors how much he appreciated the interest that had been shown. He emphasised how the Lafarge works placed importance on efficiency and cleanliness of operation, and said he appreciated the gas man's problems because of his associations with the old Brentford Gas Company.

Replying, Mr. Johnson thanked Mr. Moore and said the party had had a most interesting visit; particularly because of the similarity of problems in the manufacture of cement and in the making of gas.

Beaver Committee in Scotland

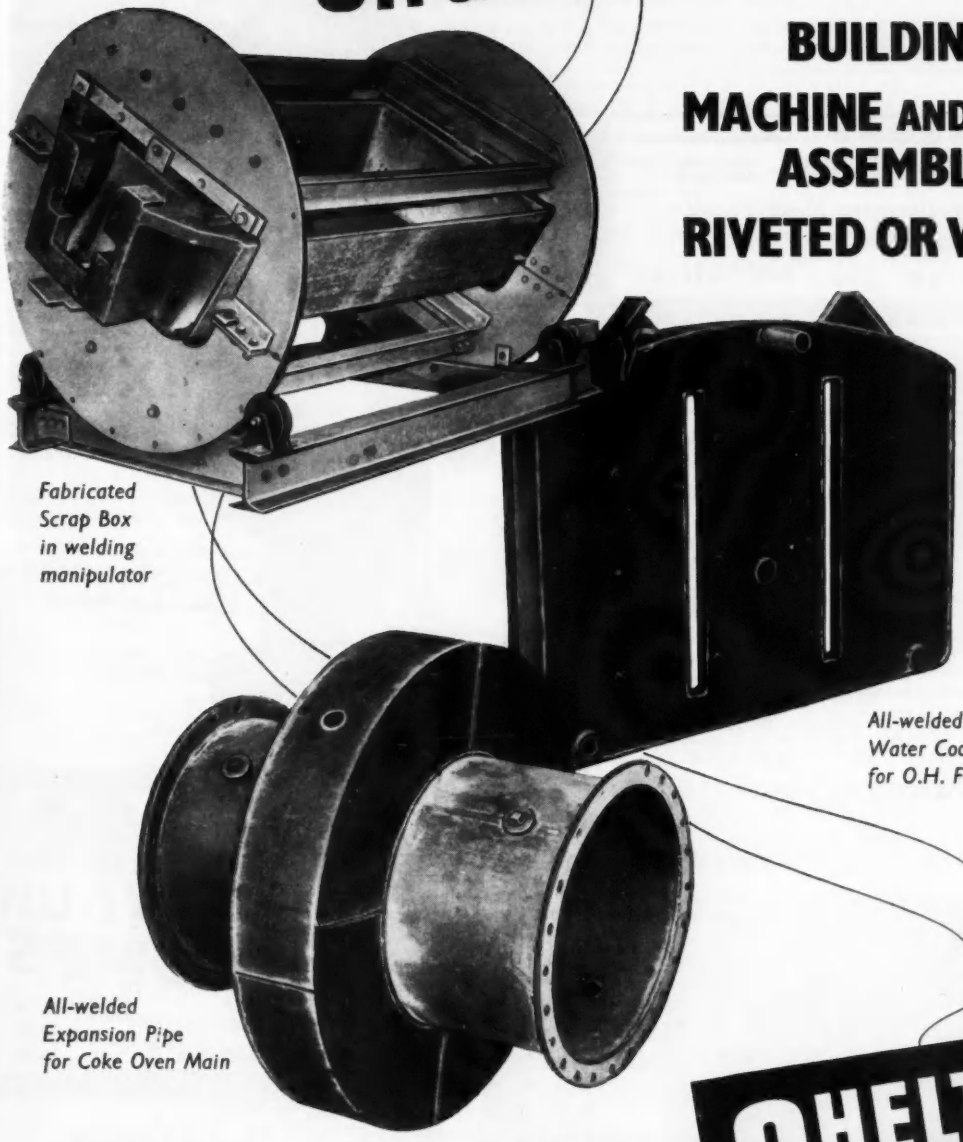
Members of the Beaver Committee, set up by the Government to investigate the problem of air pollution in Britain's large cities, were told of Edinburgh's policy to combat smoke nuisance when they toured the city. The committee heard of the problem of establishing smokeless zones in Edinburgh. Two were suggested—one in the centre of the city and one in the outskirts. It was pointed out that the promotion of smokeless zones had been hampered because of the scarcity and cost of smokeless fuels.

The Beaver Committee has visited Glasgow to discuss the projected smokeless zone in the centre of the city. Officials in Glasgow have been engaged on a survey of the area since the end of last year and are now approaching completion of the task. Their views were offered to the Committee, which inspected the various points of the proposed area. On the results of the inspection which has been proceeding the Glasgow Corporation Health Committee will determine whether to proceed with the smokeless zone policy. Parliamentary sanction would be needed.

Ashmore, Benson, Pease & Co., Ltd., have received an order from Dorman, Long & Co., Ltd., to build two large Klonne type dry gasholders at their Cleveland works, similar to but larger than the one already existing there. The capacity of the holders will be 5 mill. and 3 mill. cu.ft.; the larger will be 257 ft. high. Construction of these gasholders will begin in 1954 and will provide a considerable amount of work for the Stockton firm during manufacture. When in operation the gasholders will act as an essential part of the large extensions at present proceeding at the Cleveland works and will be used to store blast furnace and coke oven gas.

Structural Steelwork
OF EVERY DESCRIPTION

BUILDINGS
MACHINE AND OTHER ASSEMBLIES
RIVETED OR WELDED



Fabricated Scrap Box in welding manipulator

All-welded Water Cooled Door for O.H. Furnace

All-welded Expansion Pipe for Coke Oven Main

Special Equipment for the STEEL INDUSTRY

The illustration shows one example of our exceedingly wide range of fabrications. These include Steel Framed Buildings of all descriptions, Coal and Coke Handling Plants, Steel Pipes up to 84" diameter automatically welded and special equipment for the Coke Oven, Mining and Chemical Industries.

SHELTON IRON STEEL & COAL CO. LTD
Structural Steelwork

SHELTON IRON STEEL & COAL CO. LTD • STOKE-ON-TRENT • STAFFS • Telephone: STOKE-ON-TRENT 5321

Branch Offices
BIRMINGHAM · LONDON · MANCHESTER

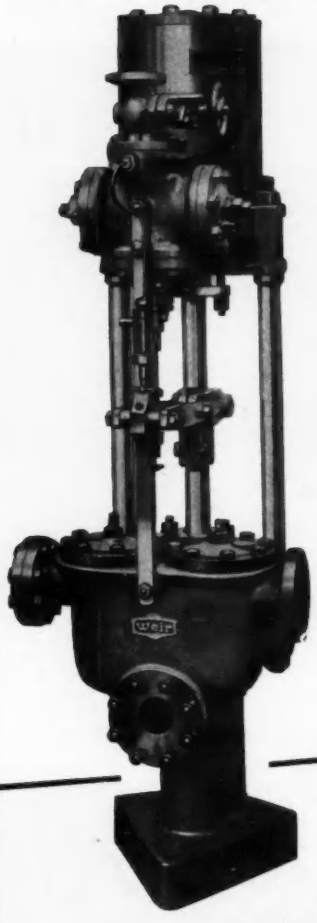
J. BROWN & CO. LTD.
SAVILE TOWN, DEWSBURY, YORKS.
Supply:–
"BROWNOX-de-LUXE" PURIFYING MATERIAL
Purchase:–
SPENT OXIDE

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.
See our Advertisement Next Week.
REAVELL & CO. LTD. IPSWICH.

CASES FOR BINDING
Quarterly Volumes of the 'Gas Journal'
7/6 each, post free
Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

Specialists in the repair of Reinforced Concrete Structures, etc.
also
LININGS FOR STEEL BUNKERS.

THE GUNITE CONSTRUCTION CO. LTD
WESTERN HOUSE, HITCHIN, HERTS.



WEIR
Direct-Acting
FEED PUMPS
Suitable for all types of boilers. Standard sizes and capacities for discharge pressures up to 300 lb. sq. in. Special designs for higher pressures. Universally recognised as the most reliable and efficient of their class.
Write for Publication No. GK. 100.
The foremost name in BOILER FEED PUMPS for more than sixty years
G. & J. WEIR LTD. CATHCART GLASGOW

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire:—52/- per annum; Foreign:—60/- per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words)—minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep × 7" wide; block screen 120.

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS MANAGER: G. B. Torrance, 42, Wychall Lane, King's Norton, Birmingham, 30.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. *'Phone:* Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. *Telegrams:* Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright. Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

FIRE!

GOOD NEWS FOR USERS OF

NU-SWIFT!

Urgent orders for London and the South can now be placed at the Nu-Swift Fire Protection Centre, 25, Piccadilly, W.1. Call or phone REGent 5724 (3 lines).

NU-SWIFT LTD · ELLAND · YORKS

In Every Ship of the Royal Navy

"KLEENOFF" *

THE COOKER CLEANER

"KLEENOFF"

FIBRE BRUSHES
RUBBER MOPS

"KAY-DEE" *

KETTLE DESCALER

* *For resale to the public, and in bulk for Works use.*

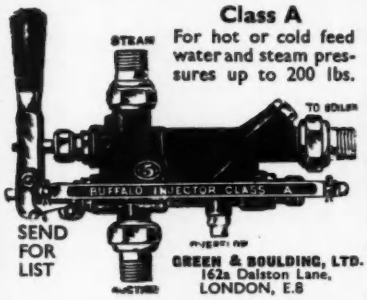
BALE & CHURCH, LTD.

7, CROMPTON WAY, CRAWLEY, SUSSEX

BUFFALO INJECTORS

Class A

For hot or cold feed water and steam pressures up to 200 lbs.



SEND FOR LIST

GREEN & BOULDING, LTD.
162a Dalston Lane,
LONDON, E.8

DISMANTLING, ERECTION, MAINTENANCE, etc.

Gasholders, Tanks, Purifiers, Steel Structures.
Site clearing.
Plant re-erected on prepared foundations.
Periodical lubrication to Gasholder Rollers.
Maintenance and Inspections.
Site repairs a speciality.

Riveters, welders, and mobile plants available

Enquiries invited within area 120 miles radius from London

ROOK BROS. LIMITED.

32, Collier Row Lane,
ROMFORD, Essex.
Tel: Romford 5174

MISCELLANEOUS

STEREO AIDS EDUCATION

in that it is a more dynamic presentation than any other of following step by step the erection of complicated plant.

District Gas Education Committees are urged to make further enquiries to

Walter King Photography,

11, Bolt Court, Fleet Street, E.C.4
CEN 2236

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

INTELLIGENT GENERAL FOREMAN required by Chemical Engineers to supervise Contractors' Building and Civil Engineering Work on Gas Works and Chemical Works projects. Good salary offered. Apply in first instance, with full details of experience, and age to No. 200, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTHERN GAS BOARD

WESTERN GROUP
HOME SERVICE ADVISER

APPLICATIONS are invited for the above appointment, covering the Carlisle, Workington and Penrith Divisions.

Candidates should be qualified in Domestic Science and capable of conducting demonstrations and lectures in Domestic subjects. Duties will also include District Home Service Calls and instruction in the use of gas appliances.

Salary according to qualifications and experience.

The post is superannuated and the successful candidate will be required to pass a medical examination.

Applications stating age, qualifications and experience, with the names of two referees, should be submitted by June 12, 1954, to the undersigned.

A. R. CROFT,
Group General Manager.

Northern Gas Board,
(Western Group),
50, Castle Street,
Carlisle.

SOUTH WESTERN GAS BOARD

BRISTOL-BATH DIVISION
BATH DISTRICT
TECHNICAL ASSISTANT—DISTRIBUTION

APPLICATIONS are invited for the appointment of TECHNICAL ASSISTANT—DISTRIBUTION to the Bath District.

Applicants should have a sound theoretical knowledge and some practical experience of gas supply on both the mains and fittings side and should have achieved a good standard in mathematics; drawing office experience would be an advantage.

Duties will comprise technical work, generally within the district, and include acting as Clerk of Works on occasions, the execution of district pressure surveys and the preparation of calculations relating to schemes under consideration.

The commencing salary will be in the range of A.P.T. Grade V, Provincial 'A' (£480-£560), according to experience and qualifications.

The successful applicant will be required to pass a medical examination and to join the Board's Staff Pension Scheme unless he is otherwise ineligible in accordance with the rules of the scheme.

Applications, giving details of age, present appointment, experience and qualifications and stating the names and addresses of two persons to whom reference can be made, should be received by the undersigned not later than June 17, 1954.

T. N. DENT,
Divisional Engineer & Manager.

Bristol-Bath Division,
Radiant House,
Bristol, 1.
May 20, 1954.

(*Classified Advertisements continued on page* 526)

APPOINTMENTS VACANT (ctd.)

OLD ESTABLISHED firm require SALES REPRESENTATIVE. Preference will be given to one having established connection with Gas Dist. Engineers. State whether well known in any particular part of the country. Apply stating age and experience to No. 198, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

WEST MIDLANDS GAS BOARD

BIRMINGHAM AND DISTRICT DIVISION
CHIEF SHOWROOMS MANAGER

APPLICATIONS are invited for the position of CHIEF SHOWROOMS MANAGER in the Birmingham and District Division.

Salary range £900 by four annual increments of £50 and one of £25, to £1,125 per annum.

The successful applicant will be responsible under the Divisional Sales & Service Officer for the development of sales of domestic and commercial appliances in an area of some 400,000 consumers, and for the supervision of Showrooms within the Birmingham Division.

First-class experience of modern sales and promotional publicity methods is essential.

The position is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, experience, qualifications and present position, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6 Augustus Road, Edgbaston, Birmingham 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

NORTH STAFFORDSHIRE DIVISION

APPLICATIONS are invited for the following posts at the Etruria Gas Works of the Stoke-on-Trent District :—

CARBONISING ASSISTANT

Candidates should have a good general education to School Certificate standard, and the possession of either the Ordinary or Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers, will be an advantage.

Preference will be given to candidates experienced in the operation and maintenance of West's continuous vertical retorts, and conversant with all routine tests appertaining to the working of the plant.

The salary will be within Grade VI (£510-£590 per annum) of the National Salary Scales for Gas Staffs.

JUNIOR CARBONISING ASSISTANT

Candidates should have a good general education to School Certificate standard, and have had experience in laboratory work and general works routine tests.

The salary will be within Grade III (£320-£490 per annum) of the National Salary Scales for Gas Staffs.

ASSISTANT CHEMIST

Candidates should have a good genera education to School Certificate standard, and be fully conversant with the usual works routine tests, possessing laboratory experience. The possession of either the Ordinary Grade Certificate of the Institution of Gas Engineers (Manufacture), or an equivalent qualification in Chemistry, will be an advantage.

The salary will be within Grade IV (£320-£510 per annum) of the National Salary Scales for Gas Staffs.

The posts are pensionable and the successful candidates may be required to pass a medical examination.

Applications, stating age, education and experience, with the names of two referees, should be addressed to Mr. J. E. Stanier, Divisional General Manager, West Midlands Gas Board, Etruria Gas Works, Stoke-on-Trent, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

PLANT FOR SALE

CONNELL OF COATBRIDGE

OFFER THE FOLLOWING NEW AND RECONDITIONED SQUIRREL CAGE MOTORS FOR IMMEDIATE DISPOSAL EX STOCK

Suitable 400/440 volts, 3 phase, 50 cycles

H.P.	Make	Enclosure	R.P.M.
144	G.E.C.	Screen Prot.	730
140	Peebles...	Screen Prot.	730
55/30	L.D.C.	Prot.	960/720
35	B.E.P.	Prot.	1450
35	Higgs	Screen Prot.	730
35	Harland	Prot.	720
30	Metro-Vick	Prot.	750
25	L. Scott	Prot.	960
25	MacFarlane	Screen Prot.	750
25	Metro-Vick	Prot.	725
22	B.T.H.	T.E.	1470
22	McGhee	Screen Prot.	965
20	Bull	Screen Prot.	1440
20	L.D.C.	Screen Prot.	1440
20	MacFarlane	Screen Prot.	750
20	L.D.C.	Screen Prot.	520
19	E.E.C.	T.E.	1460
18	Brooks	T.E.	1430
17½	Bull	Screen Prot.	1440
17	L.D.C.	T.E.	1440
16	Sturtevant	T.E.	770
15	Brooks	Screen Prot.	1500
15	Higgs	Screen Prot.	1460
15	Metro-Vick	Screen Prot.	1460
15	Bull	Screen Prot.	1440
15	Verity	Screen Prot.	1440
15	Westinghouse	Prot.	1410
15	E.E.C.	Screen Prot.	960
15	Brooks	Screen Prot.	960
15	Peebles...	Screen Prot.	940
15	E.E.C.	Screen Prot.	725/900
15	Brooks	Screen Prot.	750
15	E.E.C.	Screen Prot.	720
15	E.E.C.	Screen Prot.	570
14	Crompton	Screen Prot.	1430
13½	E.E.C.	T.E.	1465
12½	Brooks	T.E.	1440
12½	E.E.C.	Screen Prot.	955
12½	E.E.C.	Screen Prot.	720/575
12	Crompton	Screen Prot.	725
12	Brooks	Screen Prot.	720
10	Crompton	Screen Prot.	1440
10	Harland	Screen Prot.	930
10	Brooks	T.E.	960
10	E.E.C.	Screen Prot.	715
10	Harland	Ventilated	680
10	E.E.C.	Prot.	570/720
10	E.E.C.	Screen Prot.	565
8	Brooks	T.E.	1450
8	Harland	Screen Prot.	1440
7½	Brooks	Screen Prot.	950
7½	E.E.C.	Screen Prot.	715
7	E.E.C.	Prot.	470
6	E.C.C.	Prot.	710
5½	L. Scott	Screen Prot.	1430
5	A.C.E.C.	T.E.	1440
5	E.E.C.	Screen Prot.	950
4½	Metro-Vick	F.L.P.	975
4	B.T.H.	Screen Prot.	955
3½	Crompton	Screen Prot.	1430
3	Brooks	T.E.	3000
3	Howell	T.E.	1755
3	B.T.H.	Screen Prot.	1420
2½	Stamford	Ventilated	1450
2½	Brooks	T.E.	1440
2	B.T.H.	Screen Prot.	1420
2	Crompton	Screen Prot.	940

Also available, a large selection of Slip Ring Motors and miscellaneous Electrical equipment.
Full particulars from :—

JAMES N. CONNELL LTD.,
COATBRIDGE,
SCOTLAND.

Telephone : Coatbridge 1121 (5 lines).

FOR SALE.

TWO single cylinder CROSSLEY gas engines, type G.120, Nos. 81662/3. 40 nominal horse-power each. Cylinder 11 ins. dia. × 20 ins. stroke. 7ft. 3ins. flywheel. 3ft. 8½ins. driving pulley. 235 r.p.m.; with compressed air starters. In good condition; can be seen running.
Alder & Mackay, Ltd.,
New Grange Works,
Stewart Terrace, Edinburgh, 11.

APPOINTMENT WANTED

EXPORT. Enthusiastic manager with wide knowledge of gas appliance overseas markets seeks opportunity with enterprising manufacturers. Thoroughly experienced all phases export administration. Write : No. 199, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

AGENCY

AGENTS required for sale of Syphon Pots, Surface Boxes, etc.; good commissions. Apply : No. 197, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

PATENTS

KINGS PATENT AGENCY, LTD

(Director, B. T. King, A.I.M.E., Patent Agency) Advice, Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. 'Phone : City 6161.

PRESSURE VESSELS
FOR THE GAS AND CHEMICAL INDUSTRIES
Welding in all Metals (Gas or Electric)
Welding Repairs
RICHMOND WELDING CO.
Richmond Road, BRADFORD
Tel. : BRADFORD 25405

The
LIMIT OF EFFICIENCY CAN BE REACHED
by the use of
LUX
GAS PURIFYING MATERIAL
Sole Importers :
HARRISONS (London) LIMITED
66, Mark Lane, LONDON, E.C.3
Telegrams : Birchrock, London **Telephone : ROYal 3120**

SCRAP GAS METERS WANTED!
A SPEEDY SERVICE
Sell to those best suited to deal with them.
TOP PRICES PAID
Collection arranged from anywhere in U.K. *Truck Loads to our own private siding, Beddington Lane, Southern Region.*
Sell to **MITCHAM SMELTERS LTD**
ROMETAL WORKS, RED HOUSE ROAD, MITCHAM ROAD, CROYDON SURREY
TELEPHONE
THOrnton Heath 6101
PRIVATE BRANCH EXCHANGE

HOLMES

B M Industrial Consumers Meter

B M CLEANER *to maintain*

B M EASIER *to operate*

B M BETTER *delivery*

Thanks to the introduction of the automatic levelling device for the liquid level on B.M. meters, consistent accuracy is assured and attention to oil levelling is eliminated.

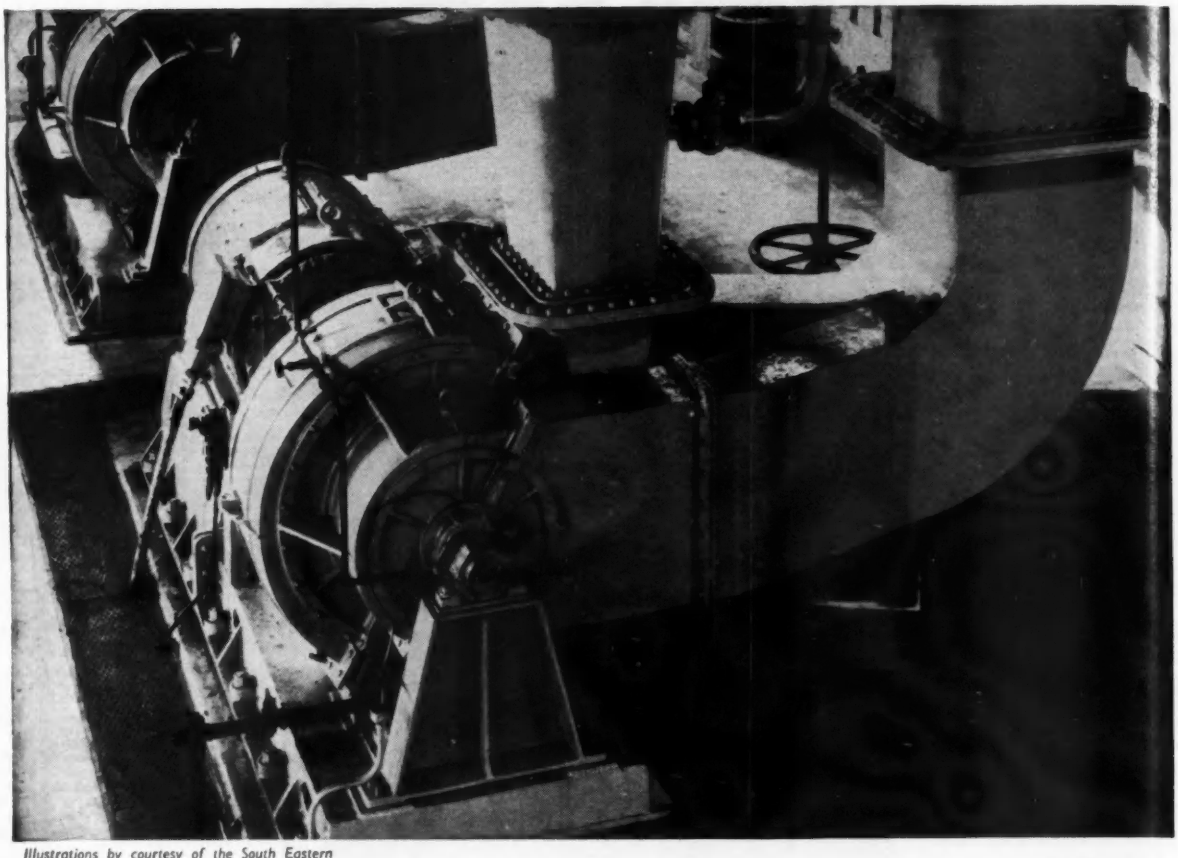
FOUNDED 1853 HOLMES HUDDERSFIELD

W. C. HOLMES & CO LTD

HUDDERSFIELD · LONDON · BIRMINGHAM

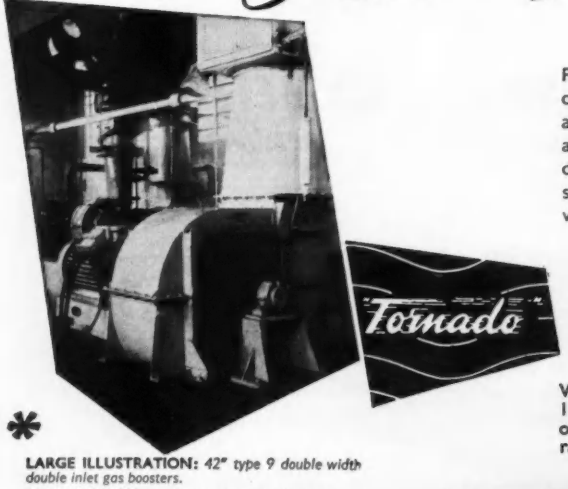
Tels.: Huddersfield 5280 London: Victoria 9971 Birmingham: Midland 6830

© 2179



Illustrations by courtesy of the South Eastern Gas Board and Messrs. Humphreys & Glasgow Ltd.

Gas Boosting *



Part of an installation at the East Greenwich Gas Works for the supply of South London's gas are the "TORNADO" gas boosters illustrated above. Each is capable of shifting over a million cubic feet of producer gas an hour, and each was supplied with cast iron gas tight casings with detachable segments for easy servicing, stainless steel impeller and shaft, self aligning roller bearings and flexible couplings. One of the boosters was arranged for motor drive and the other for steam turbine.

*

LARGE ILLUSTRATION: *42" type 9 double width double inlet gas boosters.*

DUTY: 1,095,000 cu. ft. per hour producer gas at 104°F. saturated, giving 28" w.g. differential over inlet and outlet connections taking 138 H.P.

SMALL ILLUSTRATION: *40" type 15 air blowers.*

DUTY:	*Closed outlet*	*Delivery*
Air quantity	*nil*	*12830 c.f.m.*
Speed r.p.m.	*1480*	*1475*
Static pressure	*15.8" w.g.*	*13" w.g.*
Power absorbed	*13 B.H.P.*	*39 B.H.P.*

FAN ENGINEERING AND INDUSTRIAL GAS EQUIPMENT

We are manufacturing gas boosters which cover a range of from 5,000 to 1,500,000 cubic feet per hour, and if you are concerned with the movement of air or gas, ask us to send you Publication No. 5/7, a survey of the standard range of "TORNADO" high pressure blowing and exhausting fans.

Keith Blackman LIMITED

MILL MEAD ROAD, TOTTENHAM, LONDON, N.17

'Phone: Tottenham 4522 (twelve lines) 'Grams: "Keithblac, Norphone, London."

434

Registered as a Newspaper Printed by STRAKER BROTHERS LTD., E.C.2 for WALTER KING LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4, Wednesday, May 2[illegible], 195[illegible]

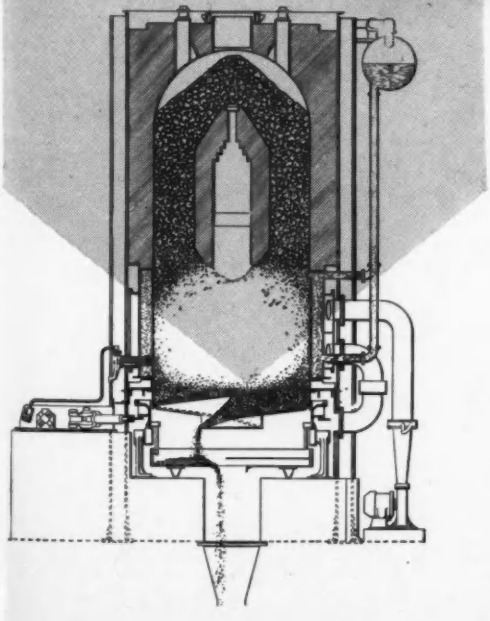
WEST'S "HOT GAS" MECHANICAL PRODUCER

HOT GAS EFFICIENCY 90%

REDUCES LABOUR COST

SAVES FUEL

DUST EXTRACTION 90%



West's "Hot Gas" Mechanical Producer is a notable development in carbonization technique.

Fuel gas is drawn from immediately above the flare bed by a centrally placed offtake which is completely insulated, enabling full advantage to be taken of the sensible heat conveyed DIRECT to the setting. Ashes, removed by a revolving helical grate, show a marked reduction in combustible content. Constant depth of ash below the fuel bed is maintained by a novel device which controls the speed of the grate.

There is little variation in fuel gas quality. The producer is adaptable to various cokes and only low blast pressure is required.

West's Gas
IMPROVEMENT CO. LTD.

ALBION IRONWORKS • MILES PLATTING . MANCHESTER 10

Telephone: COLlyhurst 2961 Telegrams: Stoker, Manchester

London Office: Columbia House, Aldwych, W.C.2. Telephone: HOLborn 4108-9 Telegrams: Wesgasco, Estrand

P2

Steel Stockholders

JOISTS
CHANNELS
ANGLES
TEES
FLATS
ROUNDS
SQUARES
PLATES
CORRUGATED SHEETS
TOOLS ETC

DUNLOP
AND
RANKEN
LTD
LEEDS

When in a hurry—
TELEPHONE LEEDS 27301
(20 LINES AT YOUR SERVICE)